SERVICE NOTES FOR THE RME-69 RECEIVER

ALIGNMENT

One of the first evidences of misalignment in a receiver is low over-all gain of the receiver. In the RME-69 Receiver this is evidenced by low meter readings on signals which were formerly capable of producing higher meter readings. Due to the tremendous gain available in the audio system of the RME-69 Receiver, a misalignment due to loss of gain may not be noticed if the condition of the receiver is judged by audio output, since it may be possible to turn the volume control to the maximum output position and still obtain high values of audio output. Misalignment, however, does not affect the circuits of the audio amplifier and has solely to do with the intermediate frequency amplifier and, to some extent, the radio frequency amplifiers. Principal among the contributions to low gain is the part which the intermediate frequency amplifier plays in providing over-all sensitivity and selectivity of a satisfactory order.

Misalignment of the radio frequency section (principally that part of the section which is made up of the high frequency oscillator) is the control of the receiver calibration. This also is susceptible to certain outside influences which can cause variations to such a degree that the stated calibration of the receiver is changed to other values. However, this effect is not a common effect and usually the calibration of the receiver, unless tampered with by inexperienced hands, will remain very close to its stated value indefinitely.

This loss of gain when occurring in the radio frequency section of the receiver is usually due to the fact that the oscillator has been grossly misaligned so that it is apparent in the frequency calibration of the receiver. In other words, it might well be said that a loss of sensitivity in the receiver occurring simultaneously with a wide-spread condition of off calibration might indicate the fact that the loss of gain is caused by misalignment of the radio frequency section of the receiver.

On the other hand, if the gain of the receiver is low, but the calibration is correct, it might be said without hesitation that the most probable cause for the low gain is the misalignment of the intermediate frequency amplifiers relative to the trimming condensers of the intermediate frequency amplifier transformers.

It is for the purpose of realignment of these intermediate frequency transformers that the following test procedure is outlined. IMPORTANT NOTE. It is essential that the 465 KC intermediate signal which is used for realignment of the intermediate frequency amplifier is not set according to any arbitrary calibration on the test oscillator itself since it has been found that commercial test oscillators for service work vary considerably, at least to an extent which will not permit proper alignment of a communication type receiver in which is installed a quartz filter. It is therefore better if no test oscillator is had, since a broadcast station of constant signal strength will furnish adequate test signal for alignment of the intermediate frequency amplifier, using the quartz filter for establishing the proper IF frequency as indicated in the following procedure.

The meter on the RME-69 receiver affords an excellent method of indicating the peak alignment of each of the transformers. The location of the three intermediate frequency amplifier transformers, T-3, T-4, and T-5 is given on Figure 4 of the illustrated sheet attached. The two padding condensers located in each of these transformers and accessible through apertures in the top of the shields can also be seen.

OUTLINE OF PROCEDURE FOR CORRECT ALIGNMENT OF THE INTERMEDIATE FREQUENCY AMPLIFIER TRANSFORMERS OF THE RME-69 RECEIVER.

The intermediate frequency amplifiers in the RME-69 Receiver are designed for a frequency of 465 KC. Since these receivers are always supplied with a quartz crystal filter, it is essential that the intermediate frequency amplifier transformers be accurately aligned with the crystal frequency. Crystals are supplied in frequencies slightly at variance from the above stated value of intermediate frequency by an amount not greater than one kilocycle plus or minus 465 KC. Rather therefore than align the intermediate frequency amplifier stages of the RME-69 to a set frequency of 465, it is essential that the alignment be done in conjunction with the quartz filter so that alignment of the intermediate frequency amplifier is achieved at the frequency of the filter. This is done as follows and when the process as herein outlined is followed accurately, maximum results will be obtained. The use of any other process of a general type will produce inferior results.

The first step in the alignment procedure is to tune in a broadcast station, preferrably in the low frequency portion of the broadcast band. The signal should be one of medium signal strength so that the R meter indicates a signal level of R9 or slightly less. If no station of this amplitude is available but a stronger station is available, a reduction in the efficiency of the antenna by the connection of a short wire to the antenna post may help to bring the signal strength as indicated down to R9. Usually between 550 and 800 KC in most any territory a station can be received at most any time for this test and adjustment.

When the station has been chosen, let us assume that its frequency is 700 KC, the next step is to slightly detune the main tuning control so that the frequency reads approximately 715 or 720 KC. This of course will tune the station out. It does not necessarily have to be the frequency mentioned or the exact frequency of detune, but the general procedure is to tune the main tuning control slightly higher than the chosen station so that it may be brought back to resonance by decreasing the scale reading of the band-spread control. This is done merely to provide vernier tuning.

With the station chosen and resonated on the band-spread scale, the crystal filter is switched to the series position which is the middle position of the three available. The band-spread scale is then adjusted with respect to the signal so that a maximum meter reading is obtained. This procedure is one which requires patience and accuracy of adjustment since the receiver is ultra sharp with the crystal filter in and there will be one definitely sharp peak indicating crystal resonance. The receiver should be tuned to this peak and left on it during all adjustments to be made regarding the intermediate frequency amplifier.

When this peak has been tuned to and the meter is at maximum reading, a small standard intermediate frequency trimmer tool of the insulated screw-driver type should be used. Then the control "E", Figure 2A, should be set so that the condenser it adjusts is set at 50% mesh. Then, without particular attention to a course of procedure in tuning, any transformer may be adjusted at any particular time, the important factor being that they all be adjusted so that the R meter is brought to and left at a maximum meter reading. Usually this adjustment will not require very much turning of the adjustment screws. A good procedure to follow is to start with the No. 1 transformer and align in sequence No. 2 and No. 3. All adjustments should be made as before mentioned so that the meter reading is maximum.

It is advisable from time to time to make sure that the signal is still adjusted to peak resonance of the crystal by slightly varying the adjustment of the band-spread control. When this procedure has been completed as outlined and all transformers have been adjusted and left at maximum meter reading, the intermediate frequency amplifier of the receiver is in peak adjustment and the crystal aligned with it for maximum effectiveness in filter action.

RME-69 RECEIVER INTERMEDIATE FREQUENCY AMPLIFIER ALIGNMENT WITH SILENCER INSTALLED

The general procedure for alignment of the intermediate frequency amplifier as described above also applies to receivers in which the LS-1 silencer has been installed. Preliminary adjustment as above described should be made with the silencer threshold control set at maximum clockwise position, of rotation. When the intermediate frequency transformers have been aligned as outlined, the silencer transformer may be peaked by turning the band switch to No. 6 band on the receiver and tuning in and resonating the frequency band around 30 megacycles so that the receiver is sensitive at that point. Then under conditions of automobile ignition interference the silencer control should be set to maximum counter-clockwise rotation position and the small screw accessible through the hole in the noise rectifier transformer located on the silencer auxiliary chassis should be adjusted for a minimum response, of the interference noise. This insures accurate alignment of the noise amplifying system with that of the intermediate frequency, a condition which must necessarily exist for efficient silencer action.

After the intermediate frequency amplifier has been aligned as per the instructions under the article concerning intermediate frequency transformer alignment, a check of the phasing of the crystal filter should be made. Tune in a broadcast station, preferrably on the low frequency end of Band 1. Then tune the main tuning control slightly to the high frequency side of it, say 10 KC or more higher in frequency than the selected station.

Then resonate the station again by means of the band-spread control. Next set the crystal switch to the series position as indicated on Figure 2A by the position "S" on control "B". Now vary the band-spread control as may be required to produce peak reading of the signal on the R meter by resonating with the crystal resonance peak.

With this setting achieved, vary the dial Number 1 slightly higher and slightly lower by five kilocycles as can be approximated by the calibration of the dial (one half division each way since one division is representative of 10 kilocycles) and notice the drop in the R meter reading. The drop so achieved by varying the setting of Dial 1 five kilocycles above and below the selected signal should be productive of an R meter drop of 40 db. or greater. In other words, if the signal when resonated produces an R meter reading of 60 db. on the R meter scale, setting the dial Number 1 five kilocycles higher in frequency than the frequency of the signal being used should make the R meter fall to 20 db. or less. Similarly, setting the dial Number 1 five kilocycles lower in frequency than the station being used, the R meter should again fall from 60 db. on the scale to 20 db. or less. Should it fail to do this, the phasing condenser (C-1, figure 4) should be adjusted and a test made as just described by five kilocycle above and below adjustment of Dial 1 until the proper variation in the R meter is achieved.

It will be found that the condenser C-1 will usually run at a very low value of capacity, very close to its minimum capacity adjustment. Therefore only slight turning of this condenser will be productive of changes which materially affect the attenuation of the crystal filter. It is usually found that this condenser is not required to be adjusted since it holds its setting very well over long periods of time. The procedure just outlined gives the proper method for checking the phasing and adjusting when necessary.

ALIGNMENT OF RADIO FREQUENCY SECTION OF THE RME-69 RECEIVER

Alignment of the radio frequency section of the receiver will affect principally the calibration of the receiver. Within certain limits this of course will also affect the sensitivity. A small variation in frequency (up to 2%) will not materially reduce the sensitivity of the receiver although they of course will show up as variations in the calibration as indicated by the required setting of the main tuning dial indicator. Correction for any variation in calibration can be made by following the suggestions outlined below.

Band 1 includes the frequencies between 550 and 1500 KC. For band one there are two frequency adjustments for adjusting the indicator to proper calibration. One of these, C_s, is adjusted as indicated on Figure 4 through the top of the shield can just in the rear of the main tuning condenser assembly. Just in front of this aperture and on the main tuning condenser assembly is C_t which is used to adjust the frequency for the high frequency end of Band 1. The procedure is this: Put the main tuning indicator to a position so that the main tuning condensers are fully meshed. The pointer of the main tuning control should then be set at maximum left end of scale so that the pointer falls just below the line above the numbers indicating the various channels. In this respect it will partially cover the top half of the numerals indicating the different tuning bands on this scale. In other words, the line which borders the semi-circular scale at the extreme counter-clockwise position should rest on the top edge of the pointer as it is turned to maximum counter-clockwise rotation and the condenser plates are at full mesh.

The next step is to choose a station or a signal of accurately known frequency, around 700 KC, and set the main indicator to the frequency of the signal which is going to be used for the test. For example: There is a station available with fairly good signal strength or a test oscillator is available which can ACCURATELY be set at 700 KC. If the receiver indicator on the main tuning dial is set at 700, and the receiver is considerably out of calibration of course the signal will not be received. However, leave the indicator at the correct frequency of the signal being used for the test and set the band-spread control to a reading of 180 on the dial at which position it has no material effect on the tuning circuits of the receiver and permits the calibration of the main tuning dial to indicate accurately the frequency of setting.

Then by means of condenser C_s (Figure 4) accessible through the trimming hole in the oscillator shield can for Band 1, adjust until the signal is brought in with the pointer set at the proper frequency. Then choose a signal at about 1200 or 1300 kilocycles, and set the main tuning dial indicator to the correct frequency for that signal and bring the signal in on that setting with trimmer C_t. It will then be necessary to return to the former frequency setting of 700 KC to make sure that the variation of C_t has not made some slight change in the setting for the lower frequency calibration point and it may be necessary to readjust C_s slightly again. Then in order to make certain of the accuracy of both settings return to the frequency chosen between 1200 and 1300 KC and if necessary, slightly readjust C_t again. After several checks on each frequency, it will be found that the calibration can be made satisfactorily.

Calibrations on the higher frequency bands are controlled for Bands 2, 3, 4, 5, and 6 by the trimmers C_r, C_q, C_p, C_o, C_n, (Figure 11-B) respectively. High side beat is used on all frequencies in the RME-69 Receiver which means that all of the condensers C_r, C_q, C_p, C_o, C_n, must be set to the lowest capacity setting which will provide a beat and the proper calibration for the frequencies in the respective bands. Calibration frequencies used are as follows:

Band 2: 2 megacycles and 3 megacycles.
Band 3: 4 megacycles, 5 megacycles, 6 megacycles.
Band 4: 7 megacycles, 9 megacycles, 11 megacycles, 13 megacycles.
Band 5: 14 megacycles, 15 megacycles, 17 megacycles.
Band 6: 30 megacycles.

After the calibration has been made accurately on all of the frequencies, or if the receiver has been found to be accurately set insofar as its calibration is concerned on all frequencies, the trimmers C_b and C_a have a distinct effect upon the RF grid circuits for bands 5 and 6 respectively. They are adjusted as follows: With a steady incoming signal on between 14 and 15 megacycles and the most effective setting of the control "D" for signal in that region, and with the antenna connected, the condenser C_b is adjusted for maximum meter reading. With these same conditions existing on 30 megacycles, with the band switch set on band 6 and the antenna connected, C_a is adjusted for maximum response on a given steady signal. All other trimming and adjusting is done manually by means of control "D", Figure 2-A, and is a variable RF amplifier and detector grid padder which can be critically adjusted for peak resonance at any frequency it is desired to tune to.

It is of importance to note the setting of the condenser C_c (Figure 4). This is the antenna coupling condenser used when the receiver is set to Band 1. It as well as condenser "C" (Figure 4) should be set to practically its minimum capacity in order to provide constant alignment and proper coupling to the antenna when using Band 1. Excessive capacity in the condenser C_c will cause misalignment of the RF amplifier and hence promiscuous beating of harmonically related broadcast frequencies to the effect that a number of whistling tones will be received on the high frequency end of the broadcast band. Excessive capacity on C will somewhat contribute to the same result but will, more than that, reduce the sensitivity on the broadcast band. When the receiver leaves the factory, they are set at a very small capacity and should not be set at any other capacity or material reduction in the efficiency of operation will be produced.

Whenever the receiver is gone over for alignment, it is well to remove the dust cover from the condenser assembly and inspect the permanence of position of the rotor plates of the ganged condenser controlled by the knob "D". This is located between the two main variable condensers and is located underneath the dust cover which is removable by unscrewing the four acorn nuts holding it down on the condenser assembly. Some times the rotors become loosened-and misplaced angularly with respect to each other. They should always be adjusted so that the rotors are at full mesh at the same time. Any slight angular displacement of one rotor with respect to the other will materially reduce the sensitivity of the receiver and destroy the preselection, thereby reducing the image frequency rejection and also the sensitivity, especially on the high frequency bands.

The padders C_b and C_a (Figure 11-B) materially contribute to the image signal rejection on the bands 5 and 6. Special care should therefore be taken in the adjustment of these condensers when the receiver is aligned.

RADIO MFG. ENGINEERS, INC.

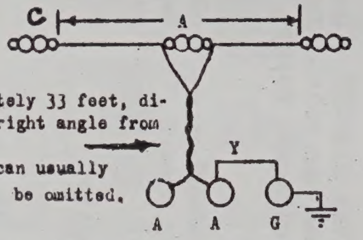
LEGEND OF RESISTORS, CONDENSERS, CHOKES, AND TRANSFORMERS OF RME-69 RECEIVER SCHEMATIC DIAGRAM.

SPECIFICATION

C_a and C_b	30 µµfd. adjustable mica padders.
C_c	30 µµfd. mica padder.
C_d	deleted.
C_e	Dual section resonator control, 4 µµfd minimum, 30 µµfd maximum.
C_f, C_g, C_j, C_k, C_l, C_m.	Adjustable trimming condensers in the intermediate frequency transformers.
C_h	25 µµfd midget air padder.
C_i	30 µµfd mica adjustable phasing condenser.
C_n, C_o, C_p, C_r	30 µµfd adjustable padders.
C_q	70 µµfd adjustable padder.
C_s	.0004 mica condenser shunted by 70 µµfd. mica adjustable trimmer.
C_t	Mica trimmer on the oscillator section of the main tuning condenser.
C_u	70 µµfd adjustable mica padder.
C_v	25 µµfd variable air condenser
C_{34}	8 µfd 450 volt electrolytic.
C_{35}	8 µfd 450 volt electrolytic.
C_{37}	.00025 µfd moulded condenser
C_{38}	.1 µfd, 400 volts
C_{39}	20 µfd, 25 volt
C_{40}	400 µµfd, moulded mica
RFC	16 millhenries
CH_1	30 henries, 100 ma.
CH_2	30 henries, .50 ma.
L_1	Band 6 RF grid coil
L_2	Band 5 RF grid coil
L_3	Band 4 RF grid coil
L_4	Band 3 RF grid coil
L_5	Band 2 RF grid coil
L_6	Band 1 RF grid coil
C_1	.01 µfd 400 volts.
C_2	.01 µfd 400 volts.
C_3	.01 µfd 400 volts.
C_4	.01 µfd 400 volts.
C_5	.01 µfd 400 volts.
C_6	.1 µfd 400 volts.
C_7	.1 µfd 400 volts.
C_8	.1 µfd 400 volts.
C_9	.002 moulded mica condenser.
C_{10}	.01 µfd 400 volts.
C_{11}	.1 µfd 400 volts.
C_{12}	.1 µfd 400 volts.
C_{13}	.1 µfd 400 volts.
C_{14}	1" of shielded braid wrapped around plate lead of second intermediate frequency amplifier tube. Approximate capacity 10 µµfds.
C_{15}	.00025 µµfd.
C_{16}	.01 µfd. 400 volts.
C_{17}	.1 µfd. 400 volts.
C_{19}	.01 µfd 400 volts.
C_{20}	.00025 µfd moulded mica condenser.
C_{21}	20 µfd 25 volt electrolytic.
C_{22}	.01 µfd 400 volts.
C_{23}	12 µfd 450 volt electrolytic.
C_{24}	.0001 moulded mica condenser.
C_{25}	.01 µfd 400 volt electrolytic.
C_{26}	.01 µfd 400 volts.
C_{27}	.0001 µfd moulded mica.
C_{28}	.01 µfd 400 volt.
C_{29}	.00025 moulded ± 5%.
C_{30}	.1 µfd 400 volts.
C_{31}	.01 µfd. 400 volts.
C_{32}	.01 µfd. 400 volts.
C_{33}	.0001 µfd moulded ± 5%.
S_1, S_2, S_3, S_4,	Band Change Switch
SW_1	115 volt line switch
SW_2	Beat oscillator on and off switch
SW_3	Switch operated by control "H" for connecting monitor circuit and opening B supply to amplifier stage.
SW_4	Crystal switch for series of for paralllel
SW_5	Cut-off switch for removing AVC action (operated in tandem with R)
T_1	Main power transformer
T_2	Audio output transformer to 4,000 ohms and 600 ohms.
T_3	First intermediate frequency amplifier transformer.
T_4	Second intermediate frequency amplifier transformer.
T_5	Third intermediate frequency amplifier transformer.
R_1	200 ohms, 1/2 watt
R_2	20,000 ohms, 1 watt
R_3	30,000 ohms, variable
R_4	5,000 ohms, 1/2 watt
R_5	1 megohm, 1/2 watt
R_6	250,000 ohms, 1/2 watt
R_7	100,000 ohms, 1/2 watt
R_8	2,000 ohms, 1/2 watt
R_9	500 ohms, 1/2 watt ±5%
R_{10}	200 ohms wire wound var. R meter balance
R_{11}	1,000 ohms. 1/2 watt
R_{12}	800 ohms, 1/2 watt
R_{13}	100,000 ohms, 2 watts
R_{14}	2,000 ohms, 1/2 watt
R_{15}	10,000 ohms, 1/2 watt
R_{16}	2,000 ohms, 1/2 watt
R_{17}	1 megohm, 1/2 watt
R_{18}	250,000 ohm potentiometer audio level control
R_{19}	1 megohm, 1/2 watt
R_{20}	100,000 ohms, 1/2 watt
R_{21}	50,000 ohms, 1/2 watt
R_{22}	250,000 ohms, 1/2 watt
R_{23}	5,000 ohms, 1/2 watt
R_{24}	1,000,000 ohms potentiometer
R_{25}	410 ohms bleeder section
R_{26}	7200 ohms, bleeder section
R_{27}	6800 ohms, bleeder section
R_{28}	10,000 ohms, 1/2 watt
R_{29}	100,000 ohms, 1/2 watt
R_{30}	100,000 ohms, 1/2 watt
R_{31}	2,000 ohms, 1/2 watt
R_{32}	2,000 ohms, 1/2 watt
R_{33}	50,000 ohms, 1/2 watt
R_{35}	10,000 ohms, 1/2 watt
R_{36}	5,000 ohms, 1/2 watt
R_{37}	1,000 ohms, 1/2 watt
R_{38}	100,000 ohms, 1/2 watt
R_{34}	50,000 ohms, 1/2 watt
L_7	Band 6 first detector grid coil
L_8	Band 5 first detector grid coil
L_9	Band 4 first detector grid coil
L_{10}	Band 3 first detector grid coil
L_{11}	Band 2 first detector grid coil
L_{12}	Band 1 first detector grid coil
L_{13}	Band 6 oscillator coil
L_{14}	Band 5 oscillator coil
L_{15}	Band 4 oscillator coil
L_{16}	Band 3 oscillator coil
L_{17}	Band 2 oscillator coil
L_{18}	Band 1 oscillator coil

The antenna input impedance to an RME-69 Receiver varies in the vicinity of 250 to 350 ohms. The antenna supply should therefore be of the Marconi type which is fed at current maximum to the receiver or of the twisted pair type where impedances of lines involved are in the vicinity of the 250 ohms previously mentioned. For maximum selectivity insofar as the input circuit is concerned, the value of this impedance should be taken into account. Antennae which are supplying signal to the receiver at a high potential point should not be used in conjunction with the RME-69 Receiver because of the great loss in voltage transfer encountered in such a combination. The half-wave doublet type of antenna providing a tuned antenna system for a certain range of frequencies has certain marked directional characteristics. These directional characteristics are evident in the fact that the greatest pick-up occurs in a direction at right angles to the axis of the antenna, forming in effect a Figure 8 pattern in which the lobes are located off the sides of the antenna instead of off the ends.

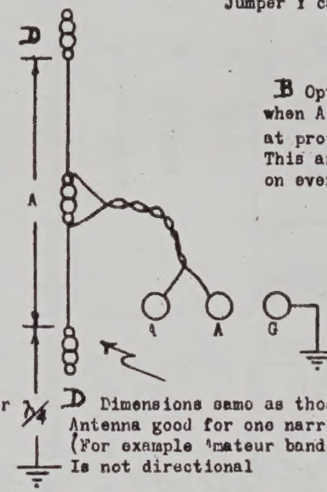
C-Optimum condition when $A = \frac{\lambda}{2}$ Not satisfactory for wide range freq. Excellent for any amateur band if $A = \frac{\lambda}{2}$ is in the middle of the band. For example: For 20 meter band antenna should be designed for 14,200 KC.

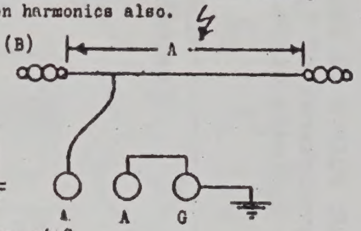


A = approximately 33 feet, directional at right angle from line of wire.

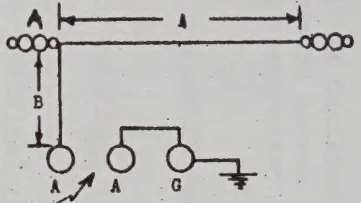
Jumper Y can usually be omitted.

B Optimum signal input to receiver when $A = \frac{\lambda}{2}$; and feeder is tapped at proper distance from center. This antenna works quite well usually on even harmonics also.





D Dimensions same as those of C. Antenna good for one narrow band. (For example Amateur band). Is not directional



A General Marconi connection. Optimum condition exists when A plus B = $\frac{\lambda}{4}$ $\frac{\lambda}{4}$ $\frac{\lambda}{4}$ etc.

TEST VOLTAGES OBTAINED AT VARIOUS POINTS IN THE RECEIVER CIRCUIT (Measurements made with voltmeter having internal resistance of 1,000 ohms per volt. Instruments with other internal resistances give entirely different readings) Note: Line voltage should be 115 v.

PLACE TEST PRODS BETWEEN	CORRECT VOLTAGE (Switch "H" in toward panel)	CORRECT VOLTAGE (Switch "H" pulled outward fm.panel)
Radio frequency amplifier plate and ground	240 volts	0 volts
Radio frequency amplifier screen and ground	100 "	0 "
Radio frequency amplifier cathode and ground	3.2 "	0 "
First detector plates	240 "	0 "
First detector screen and ground	75 "	0 "
First detector cathode and ground	3.5 "	0 "
First intermediate frequency amplifier plate and ground	250 "	0 "
First intermediate frequency amplifier screen and ground	100 "	0 "
Intermediate frequency amplifier cathode and ground	3.2 "	0 "
(The same voltages apply to the second intermediate frequency amplifier tube elements)		
6B7 plate and ground	115 "	145 "
6B7 screen and ground	25 "	35 "
42 plate and ground	244 "	280 "
42 screen and ground	248 "	290 "
42 cathode and ground	16 "	18 "
80 rectifier filament and ground	258 "	335 "
Oscillator plate and ground	248 "	0 "
Oscillator screen and ground	115 "	0 "
Beat oscillator plate and ground	180 "	210 "
Beat oscillator screen and ground	100 "	130 "
The voltage across R-31	14 "	0 "

These voltages are subject to a fluctuation of plus or minus 15% without indication of material difficulties.

MODEL 70
Chassis, Socket,
Trimmers,
Switch Data

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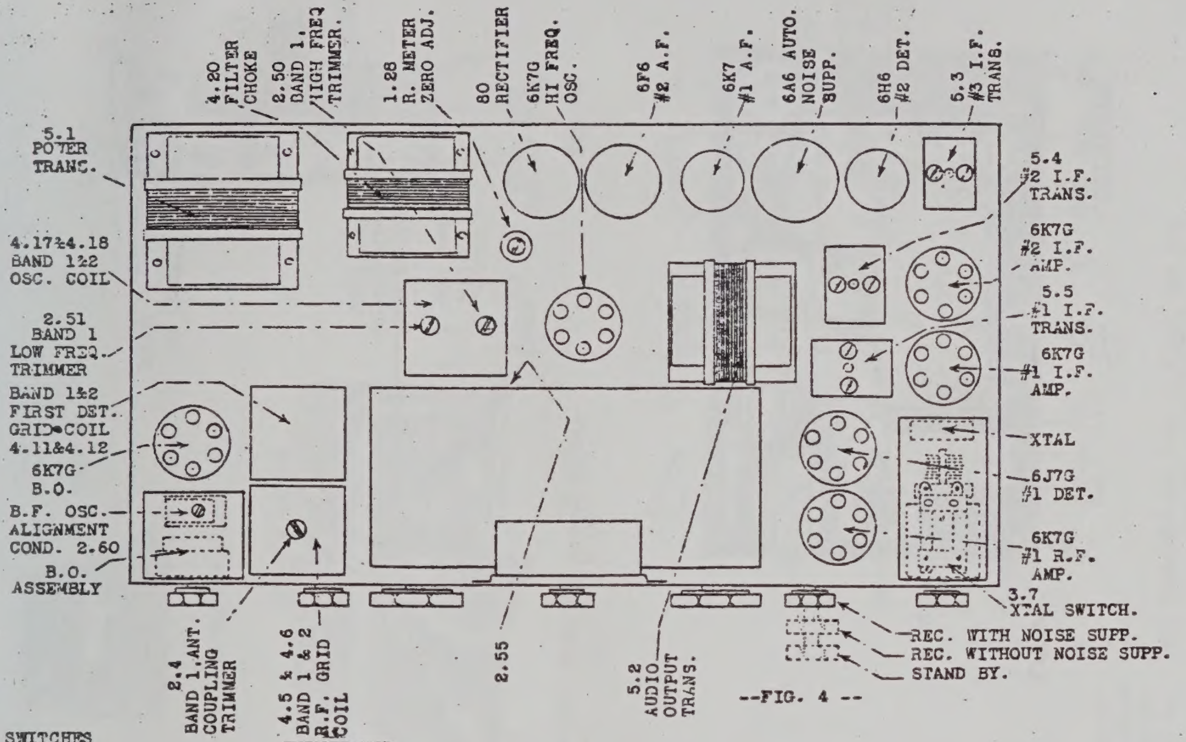


--FIG. 4 --

SWITCHES

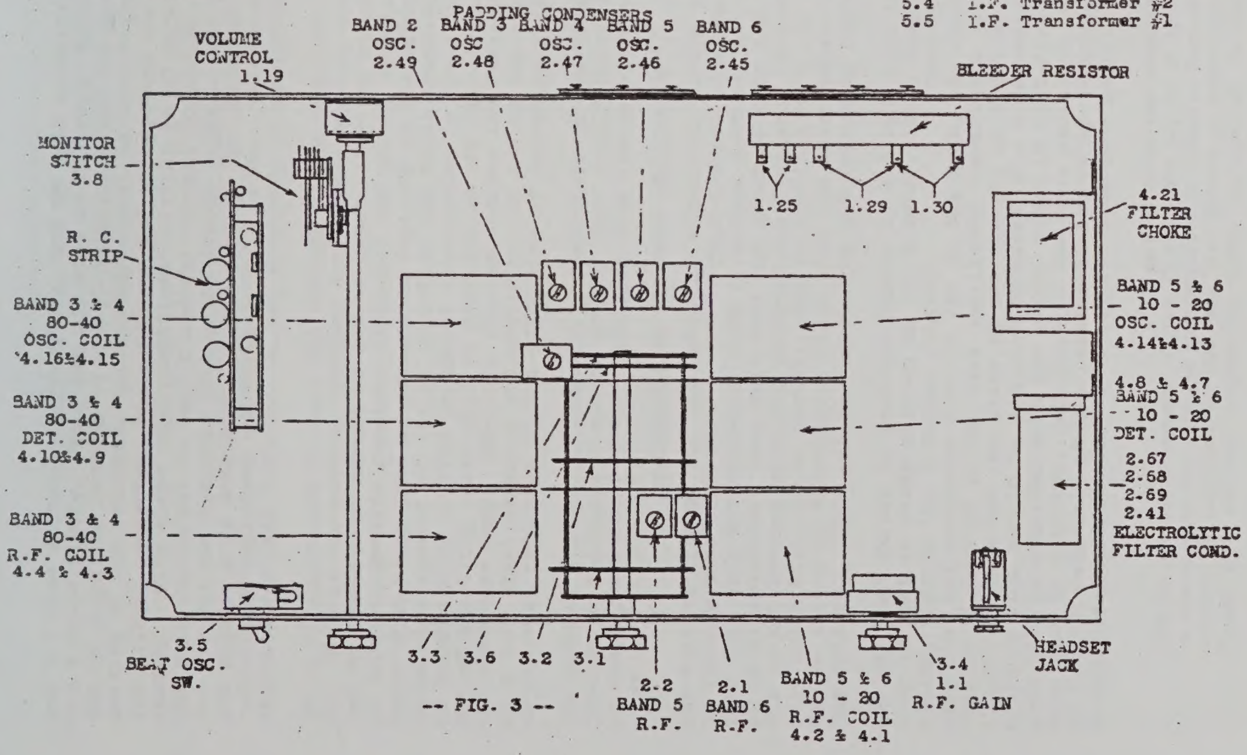
3.1	Band change switch
3.2	Band change switch
3.3	Band change switch
3.4	AVC On-Off
3.5	Beat Oscillator
3.6	Band change switch
3.7	Crystal switch
3.8	Noise suppressor and stand-by.
3.9	Line switch

INDUCTANCE

4.1	Band 6 R.F. Grid coil	4.10	Band 3 1st Det. coil	4.19	Beat Oscillator coil
4.2	Band 5 R.F. Grid coil	4.11	Band 2 1st Det. coil	4.20	30H 100MA Filter choke
4.3	Band 4 R.F. Grid coil	4.12	Band 1 1st Det. coil	4.21	30H 50 MA Filter choke
4.4	Band 3 R.F. Grid coil	4.13	Band 6 Osc. coil	RFC	10MH R.F. Choke
4.5	Band 2 R.F. Grid coil	4.14	Band 5 Osc. coil		
4.6	Band 1 R.F. Grid coil	4.15	Band 4 Osc. coil		
4.7	Band 6 1st Det. coil	4.16	Band 3 Osc. coil		
4.8	Band 5 1st Det. coil	4.17	Band 2 Osc. coil		
4.9	Band 4 1st Det. coil	4.18	Band 1 Osc. coil		

TRANSFORMERS

5.1	Power transformer
5.2	Audio transformer
5.3	I.F. Transformer #3
5.4	I.F. Transformer #2
5.5	I.F. Transformer #1



-- FIG. 3 --

IKME

and 2.1 have a distinct effect upon the RF grid circuits for bands 5 and 6 respectively. They are adjusted as follows: With a steady incoming signal on between 14 and 15 megacycles and the most effective setting of the resonator control for signal in that region, and with the antenna connected, the condenser 2.2 is adjusted for maximum meter reading. With these same conditions existing on 30 megacycles, with the band switch set on band 6 and the antenna connected, 2.1 is adjusted for maximum response on a given steady signal. All other trimming and adjusting is done manually by means of the resonator control, a variable RF amplifier and detector grid padder, which can be critically adjusted for peak resonance at any frequency it is desired to tune to.

It is of importance to note the setting of the condenser 2.4 (Figure 4). This is the antenna coupling condenser used when the receiver is set to Band 1. It should be set to practically its minimum capacity in order to provide constant alignment and proper coupling to the antenna when using Band 1. Excessive capacity in the condenser 2.4 will cause misalignment of the RF amplifier and hence promiscuous beating of harmonically related broadcast frequencies to the effect that a number of whistling tones will be received on the high frequency end of the broadcast band. When the receiver leaves the factory it is set at a very small capacity and should not be set at any other capacity or material reduction in the efficiency of operation will be produced.

The padders 2.2 and 2.1 materially contribute to the image signal rejection on the bands 5 and 6. Special care should therefore be taken in the adjustment of these condensers when the receiver is aligned.

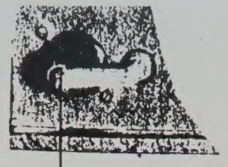


FIG. 7

MODEL
69 (late)

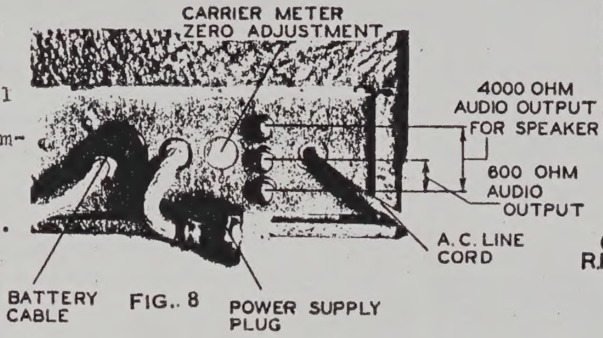


FIG.. 8

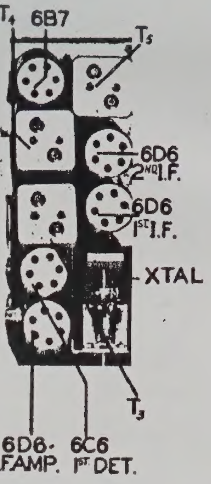


Fig. 4B

ADJUSTMENT OF THE BEAT OSCILLATOR

The beat oscillator has its frequency adjustable on the panel by means of the C.W.Tone control. This control is normally set for zero beat with the condenser 2.59 (C.W.Tone control) set at 50% mesh. If it is found that zero beat does not occur or that the beat oscillator is not beating with the intermediate frequency to produce an audible solid beat, it is probably due to the fact that the beat oscillator is tuning to a frequency other than the intermediate frequency of the receiver. This can be remedied by the following procedure:

Set the Band Switch to position Number 1, and tune in a broadcast station so that it reads maximum on the R meter. With this condition existing, snap on the C.W.Tone Control. Then by making certain that the condenser 2.59 is set to 50% mesh, the condenser 2.60 (Figure 4) located in the beat oscillator compartment just below 2.69 (Figure 4) near the top plate of the chassis in front of the beat oscillator tube should be adjusted by means of a screw-driver so that zero beat is achieved with the signal tuned in as before mentioned. When this is achieved, variation of the beat oscillator from minimum to maximum mesh will give a total beat frequency variation of eight kilocycles (plus or minus 4 kilocycles from zero beat).

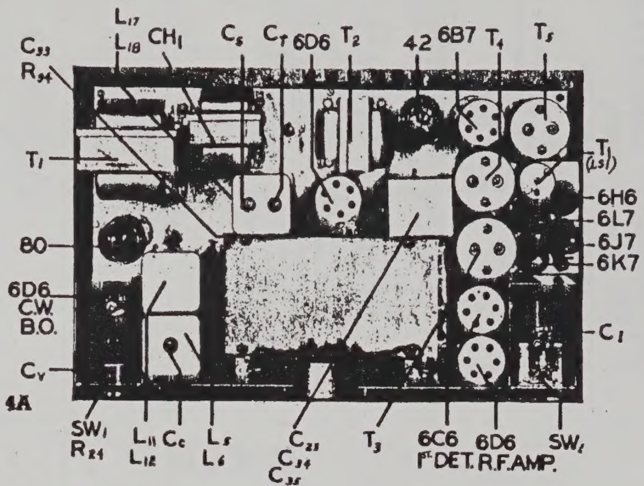


Fig. 4A

Figure 4A shows the component layout for 69 receiver with LS-1 noise silencer. Figure 4B shows the layout of the section which was changed to accommodate the silencer and therefore is standard form of chassis layout. If the receiver is connected for use, the line drawing in connection with the photograph in Figure 4A or 4B will indicate the socket locations of the respective tubes.

FOR ALIGNMENT AND FIGS. 3,6,11A, and 11B
SEE RME 69 VOLUME X Pages 3 through 6.

RADIO MFG. ENGINEERS, INC.

MODEL RME 69-B Batt.
MODEL RME 69-A AC
or Batt. Schematics

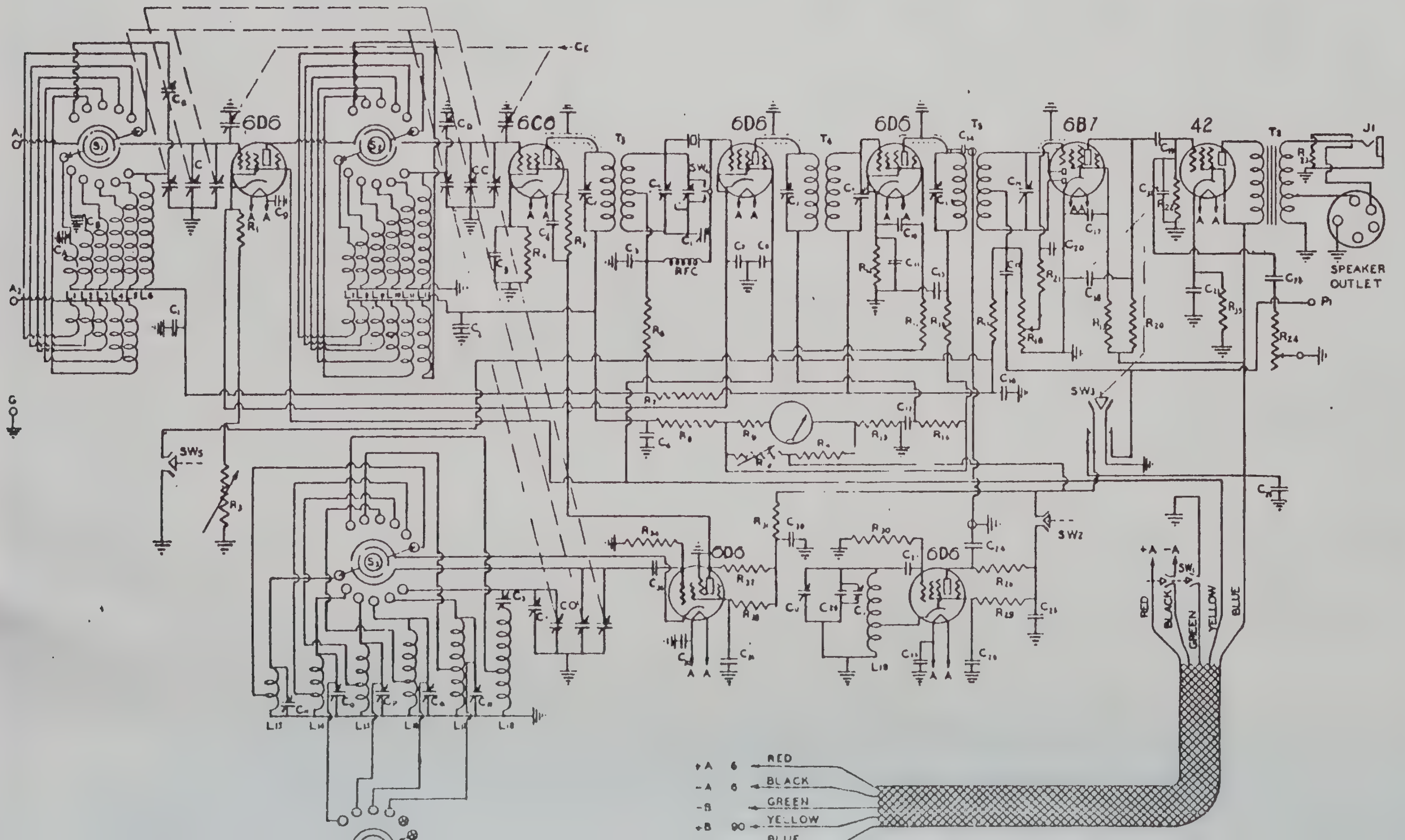


Fig. 16. Schematic Diagram of RME 69-B for Battery Operation

IF PEAK 465 KC

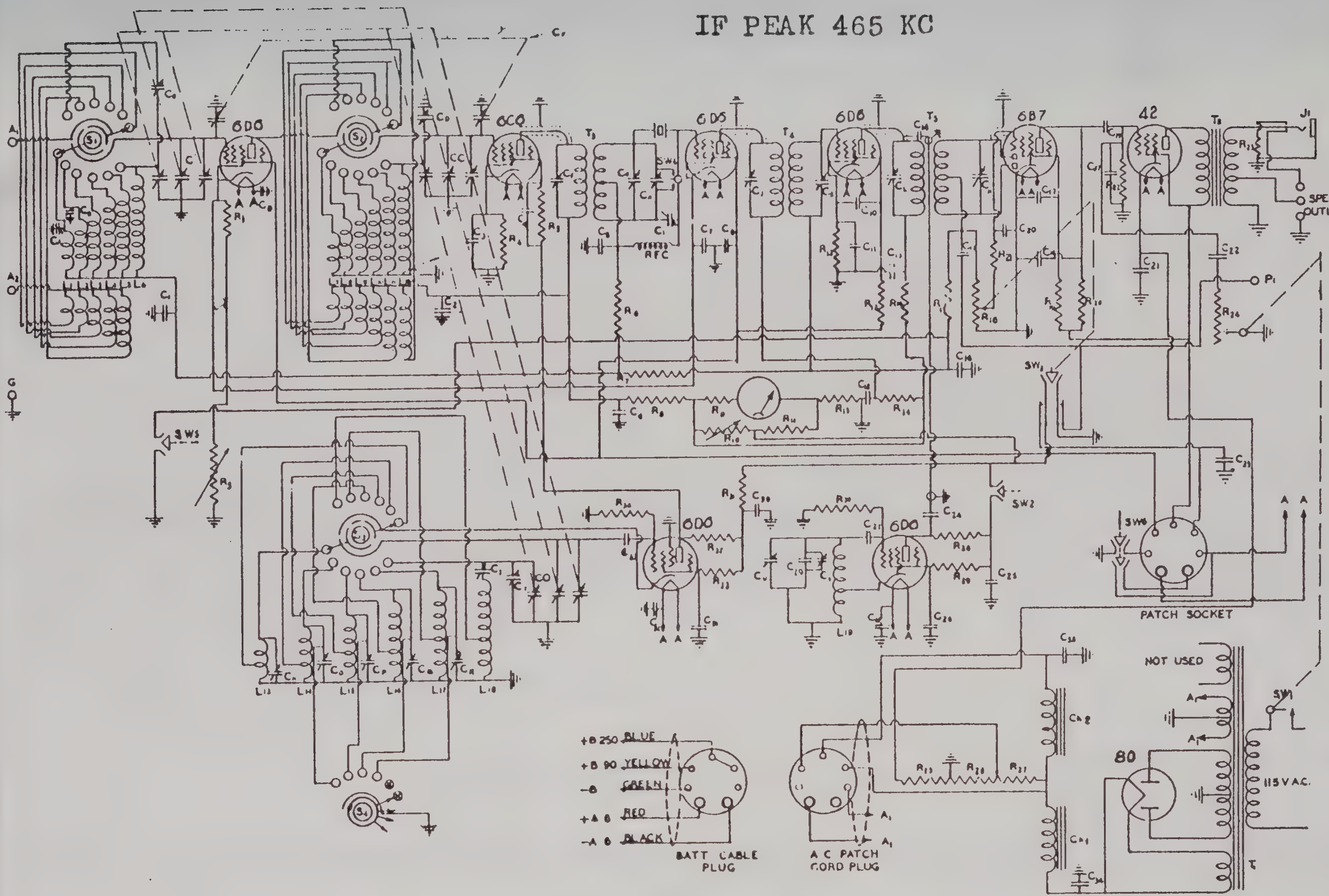


Fig. 17. Schematic Diagram of RME 69-A for AC or Battery Operation

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MODEL RME 69-A AC or Batt.
MODEL RME 69-B Batt.
Parts List

RADIO MFG. ENGINEERS, INC.

DESIGNATION	SPECIFICATION
L_1	Band 6 RF grid coil.
L_2	Band 5 RF grid coil.
L_3	Band 4 RF grid coil.
L_4	Band 3 RF grid coil.
L_5	Band 2 RF grid coil.
L_6	Band 1 RF grid coil.
L_7	Band 6 first detector grid coil.
L_8	Band 5 first detector grid coil.
L_9	Band 4 first detector grid coil.
L_{10}	Band 3 first detector grid coil.
L_{11}	Band 2 first detector grid coil.
L_{12}	Band 1 first detector grid coil.
L_{13}	Band 6 oscillator coil.
L_{14}	Band 5 oscillator coil.
L_{15}	Band 4 oscillator coil.
L_{16}	Band 3 oscillator coil.
L_{17}	Band 2 oscillator coil.
L_{18}	Band 1 oscillator coil.

DESIGNATION	SPECIFICATION
S_1, S_2, S_3, S_4.	Band change switch.
SW_1	115 volt line switch.
SW_2	Beat oscillator on and off switch.
SW_3	Switch operated by control "H" for connecting monitor circuit and opening B supply to amplifier stages.
SW_4	Crystal switch for series or for parallel control.
SW_5	Cut-off switch for removing AVC action (operated in tandem with R_3)
R_{14}	2,000 ohms, 1/2 watt.
R_{15}	10,000 ohms, 1/2 watt.
R_{16}	2,000 ohms, 1/2 watt.
R_{17}	1 megohm, 1/2 watt.
R_{18}	250,000 ohm potentiometer audio level control.
R_{19}	1 megohm, 1/2 watt.
R_{20}	100,000 ohms, 1/2 watt.
R_{21}	50,000 ohm, 1/2 watt.
R_{22}	250,000 ohms, 1/2 watt.
R_{23}	5,000 ohms, 1/2 watt.
R_{24}	1,000,000 ohms potentiometer.
R_{25}	410 ohms bleeder section.
R_{26}	7200 ohms, bleeder section.
R_{27}	6800 ohms, bleeder section.
R_{28}	10,000 ohms, 1/2 watt.
R_{29}	100,000 ohms, 1/2 watt.
R_{30}	100,000 ohms, 1/2 watt.
R_{31}	2,000 ohms, 1/2 watt.
R_{32}	2,000 ohms, 1/2 watt.
R_{33}	50,000 ohms, 1/2 watt.
R_{34}	50,000 ohms, 1/2 watt.
J_1	Headphone jack.
RFC	16 millhenries.
CH_1	30 henries, 100 ma.
CH_2	30 henries, 50 ma.
T_1	Main power transformer.
T_2	Audio output transformer to 4,000 ohms and 600 ohms.
T_3	First intermediate frequency amplifier transformer.
T_4	Second intermediate frequency amplifier transformer.
T_5	Third intermediate frequency amplifier transformer.
R_1	150 ohms, 1/2 watt.
R_2	20,000 ohms, 1 watt.
R_3	30,000 ohms, variable.
R_4	5,000 ohms, 1/2 watt.
R_5	1 megohm, 1/2 watt.
R_6	250,000 ohms, 1/2 watt.
R_7	100,000 ohms, 1/2 watt.
R_8	2,000 ohms, 1/2 watt.
R_9	500 ohms, 1/2 watt ±5%
R_{10}	200 ohms, wire wound var. R meter balance
R_{11}	1,000 ohms, 1/2 watt.
R_{12}	500 ohms, 1/2 watt
R_{13}	100,000 ohms, 2 watts.

DESIGNATION	SPECIFICATION
C_a and C_b	30 μμfd. adjustable mica padders.
C_c	30 μμfd. mica padder.
C_d	Mica trimming condenser on center sec of main tuning condenser. 50 μμfd. m
C_e	Dual section resonator control. 4 μμf minimum, 30 μμfd. maximum.
$C_f, C_g, C_j, C_k, C_l, C_m$.	Adjustable trimming condensers in the intermediate frequency transformers.
C_h	25 μμfd. midget air padder
C_i	30 μμfd. mica adjustable phasing cond
C_n, C_o, C_p, C_r	30 μμfd. adjustable padders.
C_q	70 μμfd. adjustable padder.
C_s	.0004 mica condenser shunted by 70 μμ mica adjustable trimmer.
C_t	Mica trimmer on the oscillator sectio the main tuning condenser.
C_u	70 μμfd. adjustable mica padder.
C_v	25 μμfd. variable air condenser
C_1	.01 μfd. 400 volts.
C_2	.01 μfd. 400 volts.
C_3	.01 μfd. 400 volts.
C_4	.01 μfd. 400 volts.
C_5	.01 μfd. 400 volts.
C_6	.1 μfd. 400 volts.
C_7	.1 μfd. 400 volts.
C_8	.1 μfd. 400 volts.
C_9	.002 moulded mica condenser.
C_{10}	.01 μfd. 400 volts.
C_{11}	.1 μfd. 400 volts.
C_{12}	.1 μfd. 400 volts
C_{13}	.1 μfd. 400 volts.
C_{14}	1" of shielded braid wrapped around pl lead of second intermediate frequency amplifier tube. Approximate capacity 10 μμfds.
C_{15}	.00025 μμfd.
C_{16}	.01 μfd. 400 volts.
C_{17}	.1 μfd. 400 volts.
C_{19}	.01 μfd. 400 volts.
C_{20}	.00025 μfd. moulded mica condenser.
C_{21}	20 μfd. 25 volt electrolytic.
C_{22}	.01 μfd. 400 volts.
C_{23}	12 μfd. 450 volt electrolytic.
C_{24}	.0001 moulded mica condenser
C_{25}	.01 400 volt electrolytic
C_{26}	.01 μfd. 400 volt.
C_{27}	.0001 μfd. moulded mica.
C_{28}	.01 μfd. 400 volt.
C_{29}	.00025 moulded ± 5%
C_{30}	.1 μfd. 400 volts.
C_{31}	.01 μfd. 400 volts.
C_{32}	.01 μfd. 400 volts.
C_{33}	.0001 μfd. moulded ± 5%
C_{34}	8 μfd. 450 volt electrolytic
C_{35}	8 μfd. 450 volt electrolytic.
C_{37}	.00025 μfd. moulded condenser.

RADIO MFG. ENGINEERS, INC.

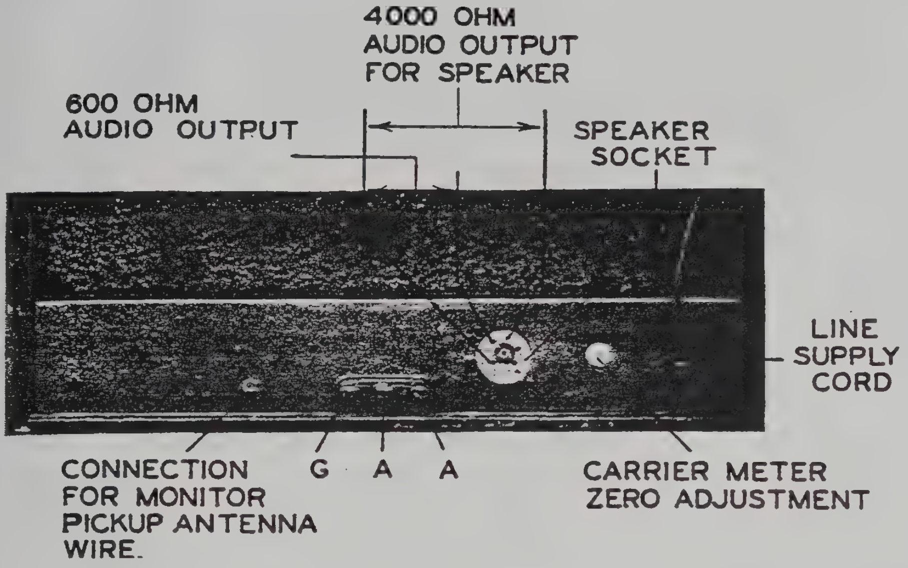

4000 OHM AUDIO OUTPUT FOR SPEAKER
600 OHM AUDIO OUTPUT
SPEAKER SOCKET
LINE SUPPLY CORD
CONNECTION FOR MONITOR PICKUP ANTENNA WIRE.
G
A
A
CARRIER METER ZERO ADJUSTMENT

FIG. 3

FOR SCHEMATIC SEE VOLUME VII.

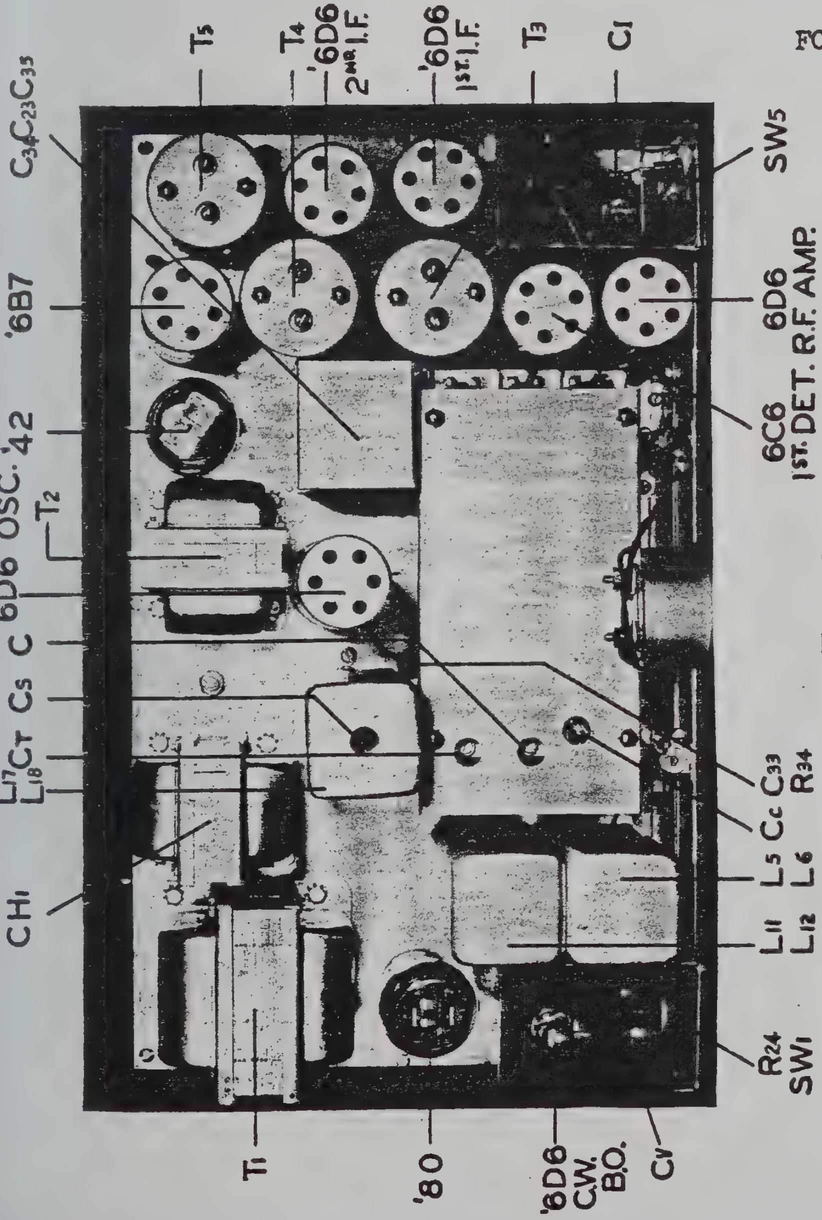


FIG. 4

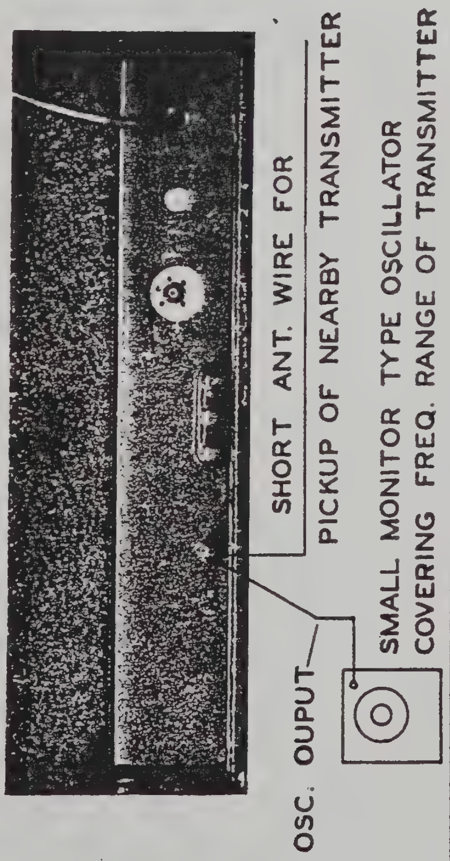

SHORT ANT. WIRE FOR PICKUP OF NEARBY TRANSMITTER
SMALL MONITOR TYPE OSCILLATOR COVERING FREQ. RANGE OF TRANSMITTER
OSC. OUPUT

FIG. 6

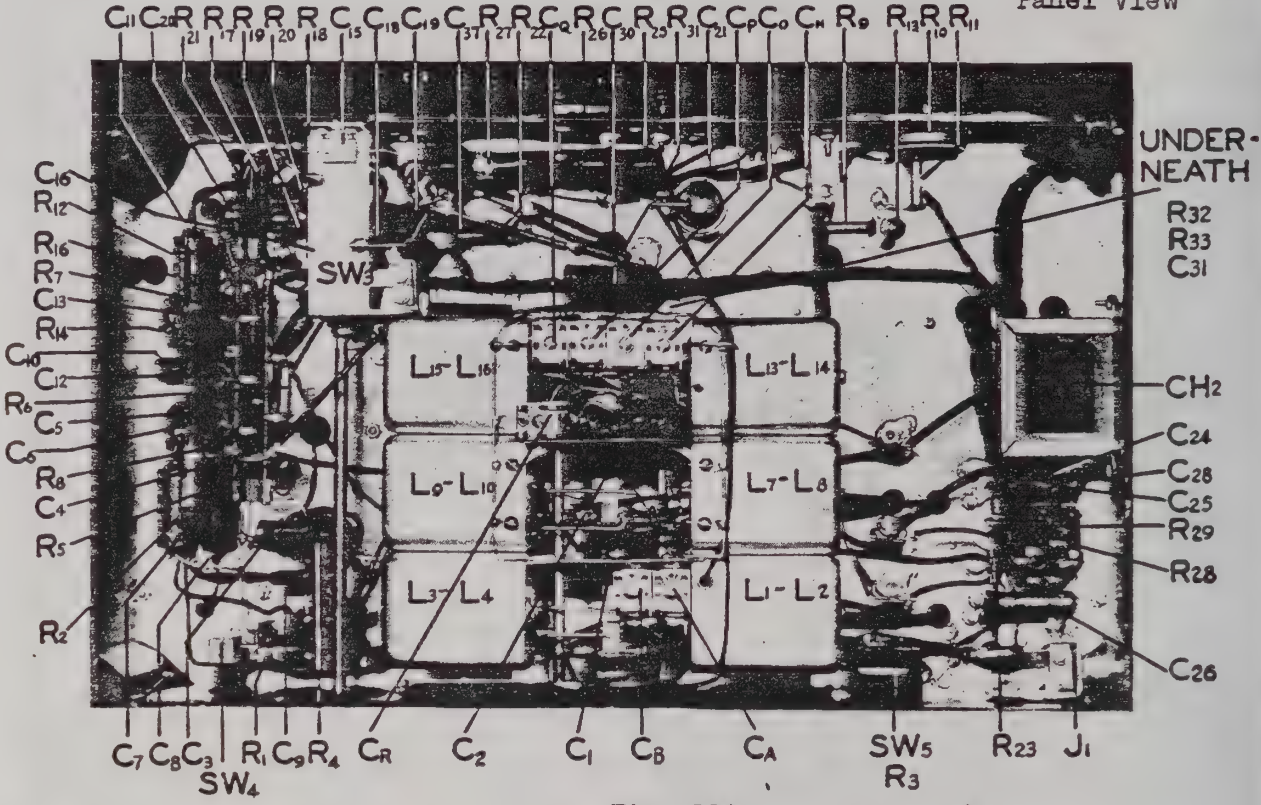


Fig. 11A

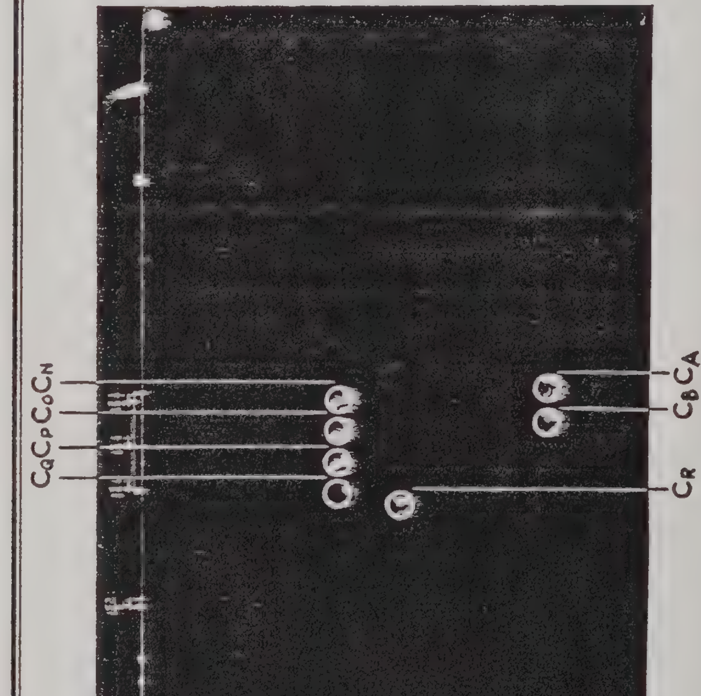


Fig. 11B

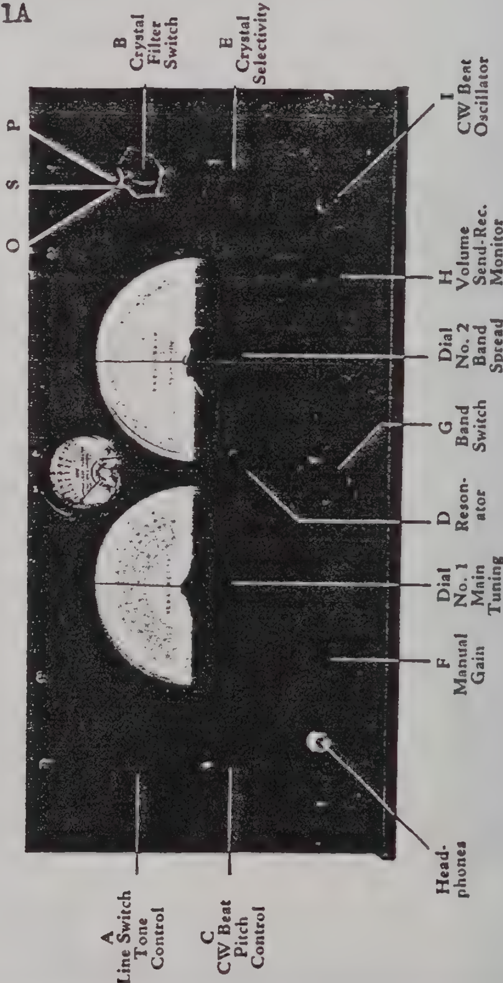


Fig. 2A. Front Panel Layout of the Standard RME-69, AC Model.

MODEL RME 69
Chassis,Trimmers
Panel View

RADIO MFG. ENGINEERS, INC.

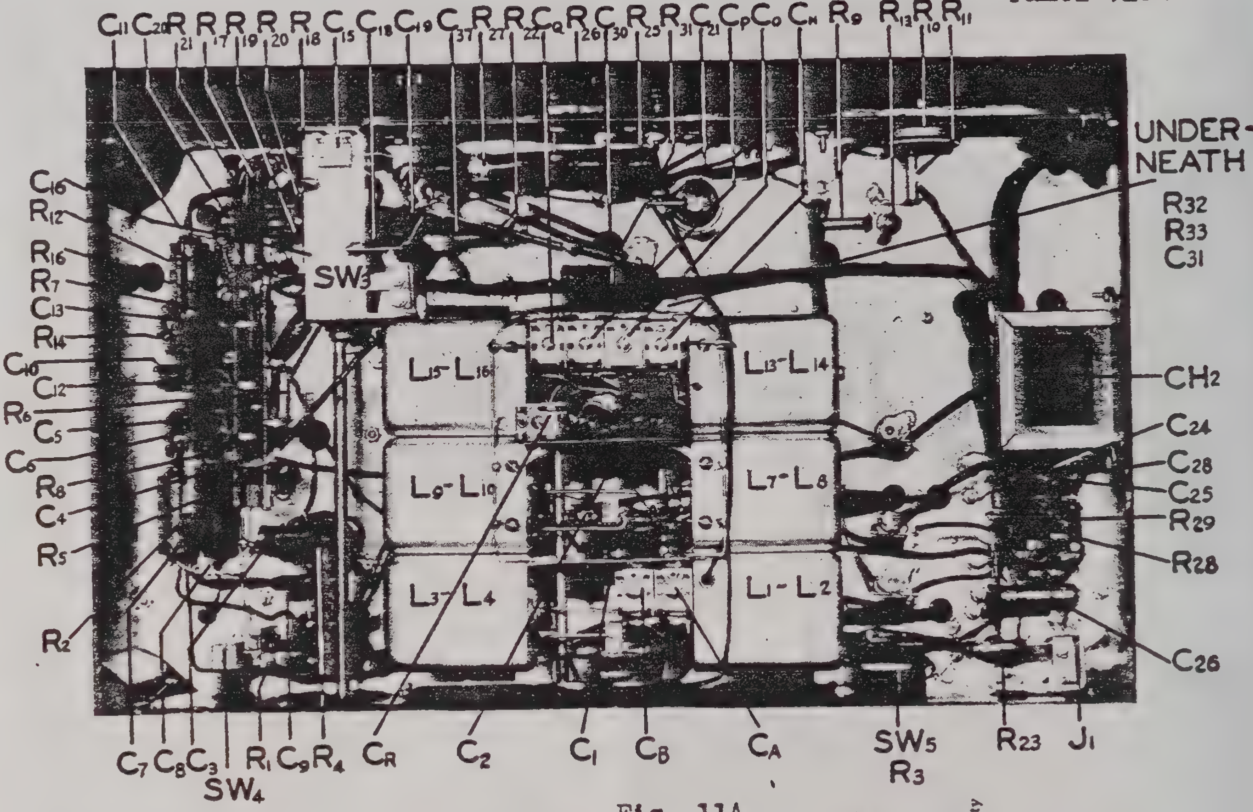

C11 C20 R21 R17 R19 R20 R18 C15 C18 C19 C37 R27 R22 CQ R26 C30 R25 R31 C21 CP CO CN R9 R13 R10 R11
UNDER-NEATH
R32
R33
C31
C16
R12
R16
R7
C13
R14
C10
C12
R6
C5
C6
R8
C4
R5
R2
SW3
L15-L16
L13-L14
L9-L10
L7-L8
L3-L4
L1-L2
CH2
C24
C28
C25
R29
R28
C26
C7 C8 C3 SW4 R1 C9 R4 CR C2 C1 CB CA SW5 R3 R23 J1

Fig. 11A

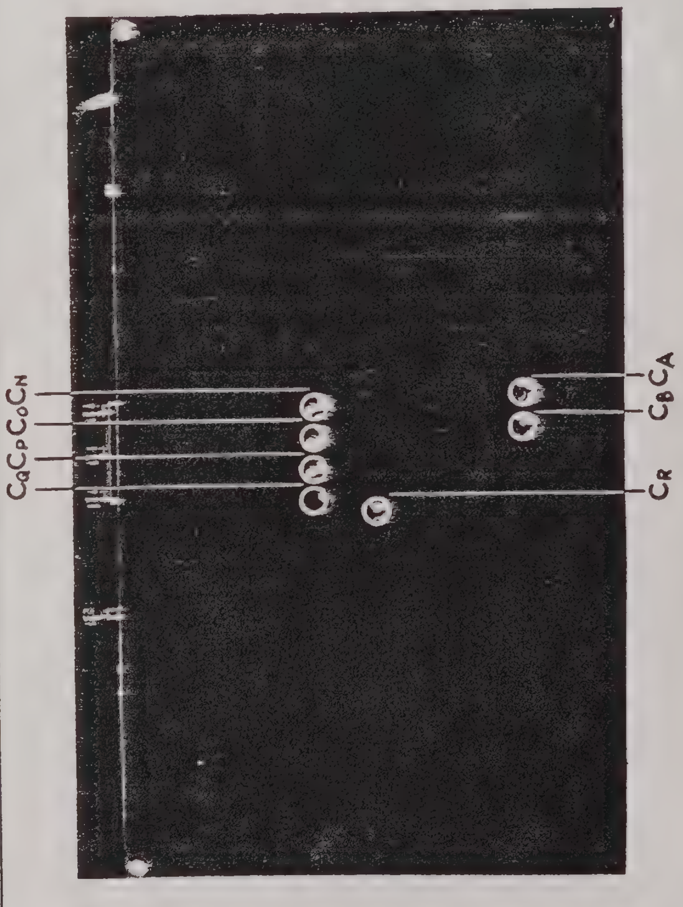


Fig. 11B

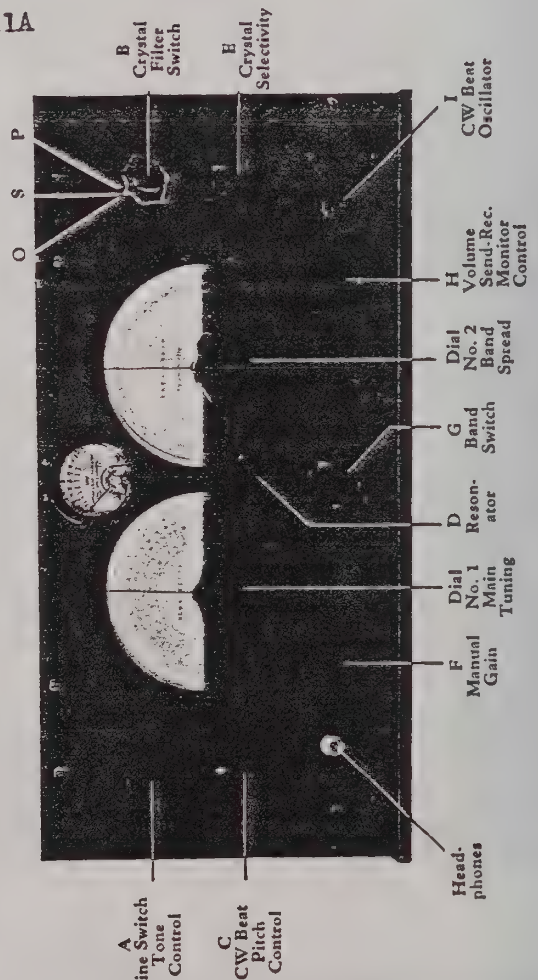
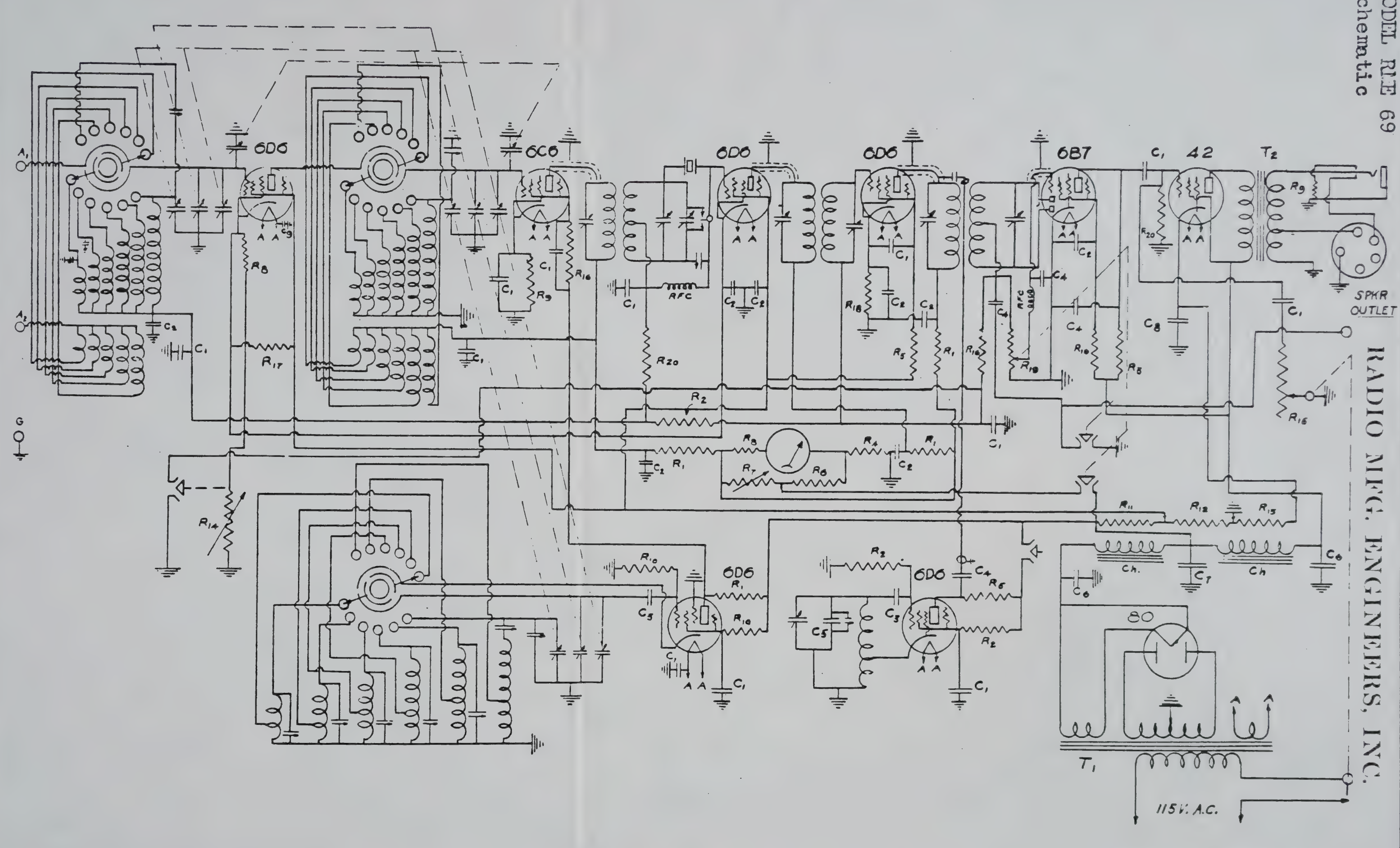


Fig. 2A. Front Panel Layout of the Standard RME-69, AC Model.

MODEL RME 69
Schematic



RADIO MFG. ENGINEERS, INC.

RME 69 CIRCUIT SCHEMATIC

RADIO MFG. ENGINEERS, Inc.
306 FIRST AVENUE PEORIA, ILLINOIS, U.S.A.

DRAWN BY DATE CHANGED BY

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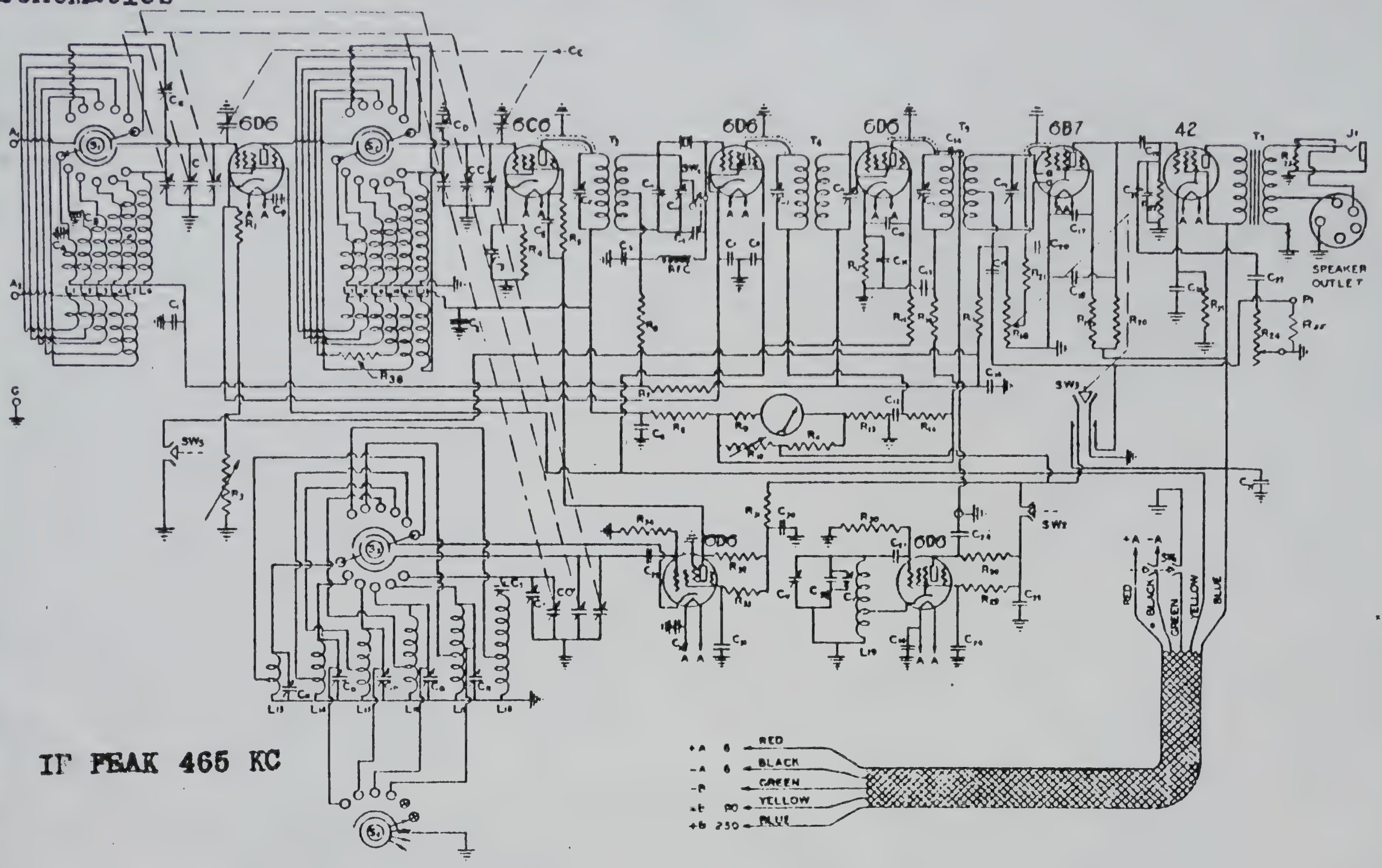
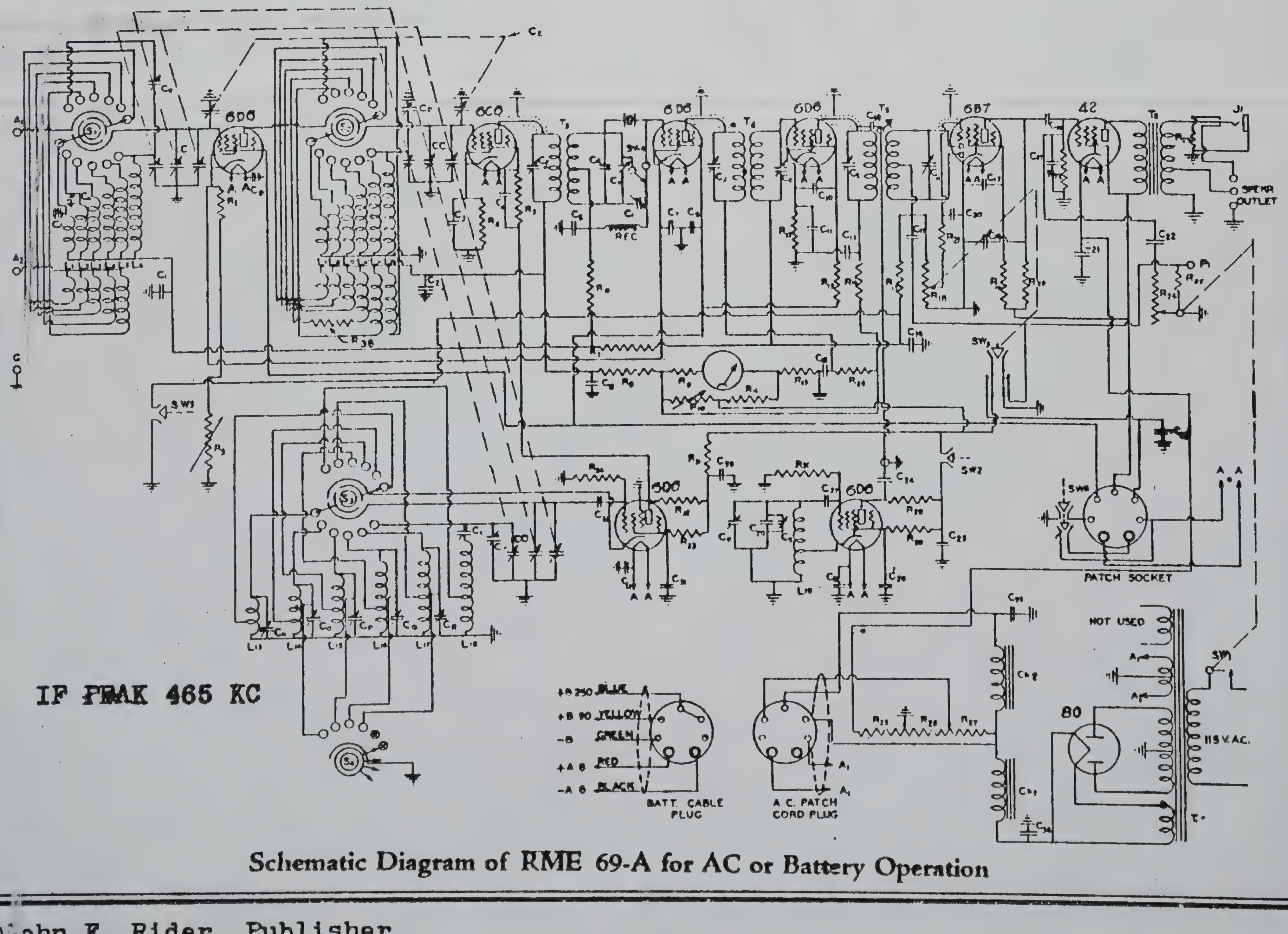
RADIO MFG. ENGINEERS, INC.



IF PEAK 465 KC

Schematic Diagram of RME 69-B for Battery Operation

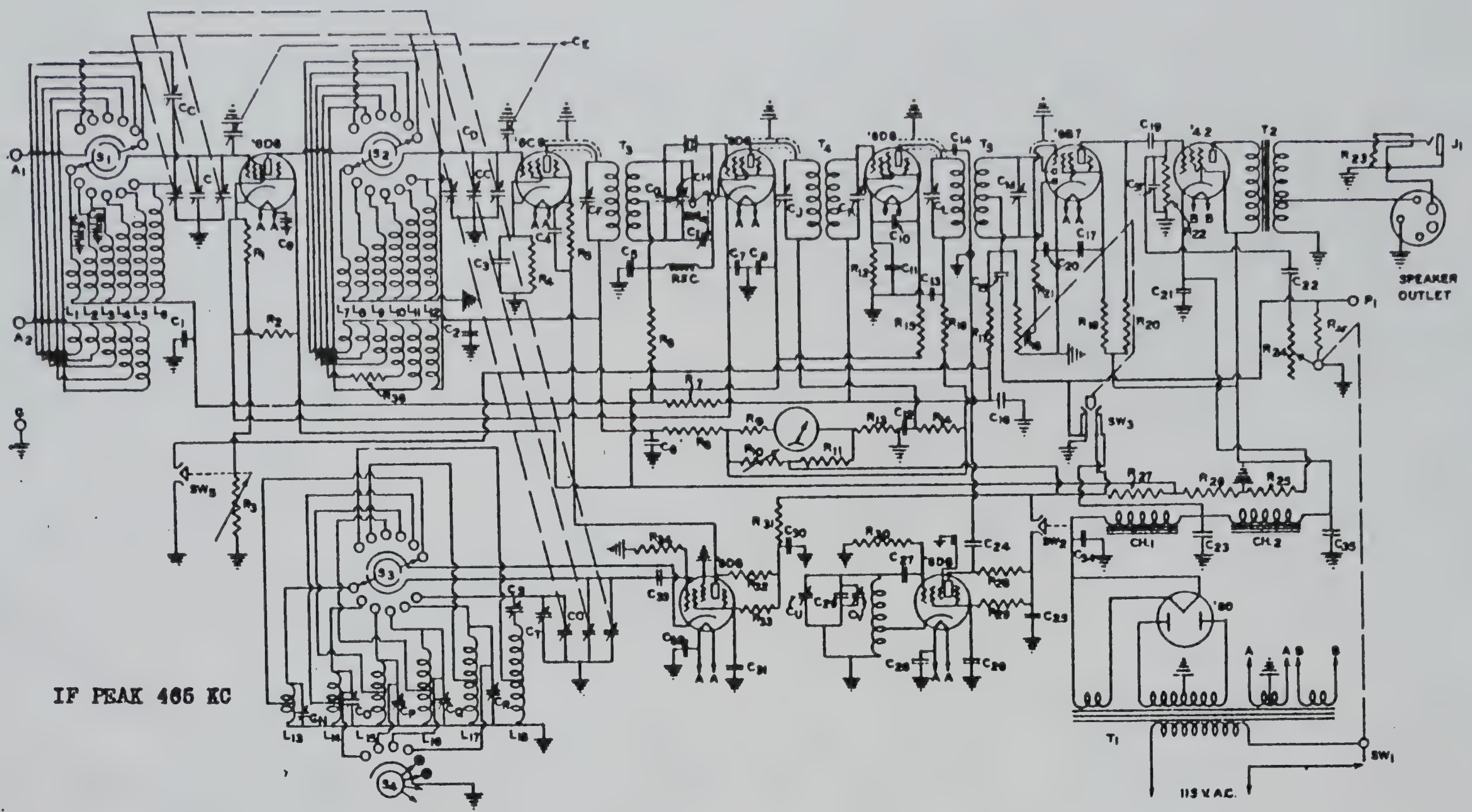


IF PEAK 465 KC

Schematic Diagram of RME 69-A for AC or Battery Operation

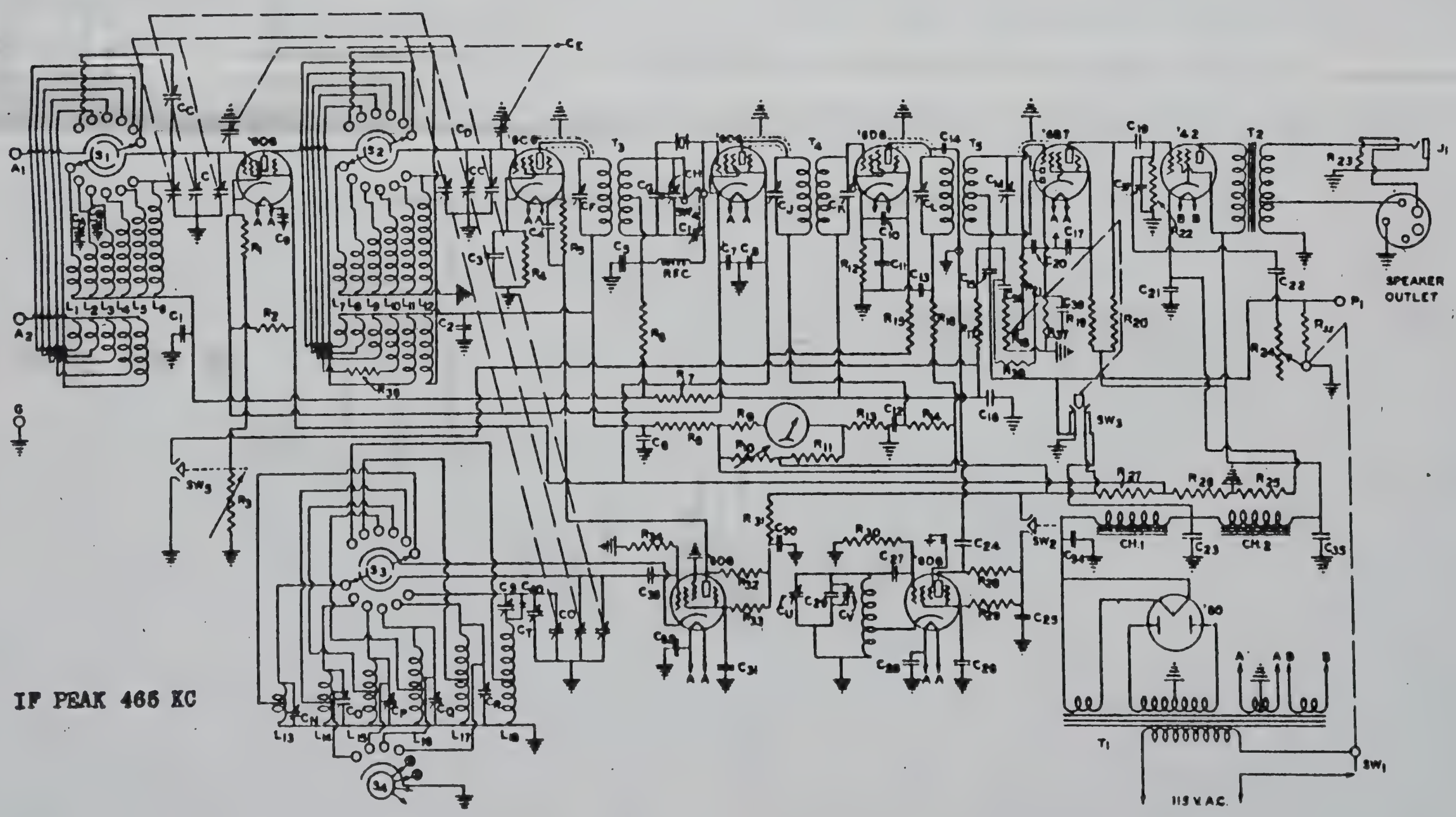
MODEL 69 AC Late
MODEL 69AC Late Revised
Schematics

RADIO MFG. ENGINEERS, INC.



IF PEAK 465 KC

RME 69 SCHEMATIC CIRCUIT *AC-LATE* C-23



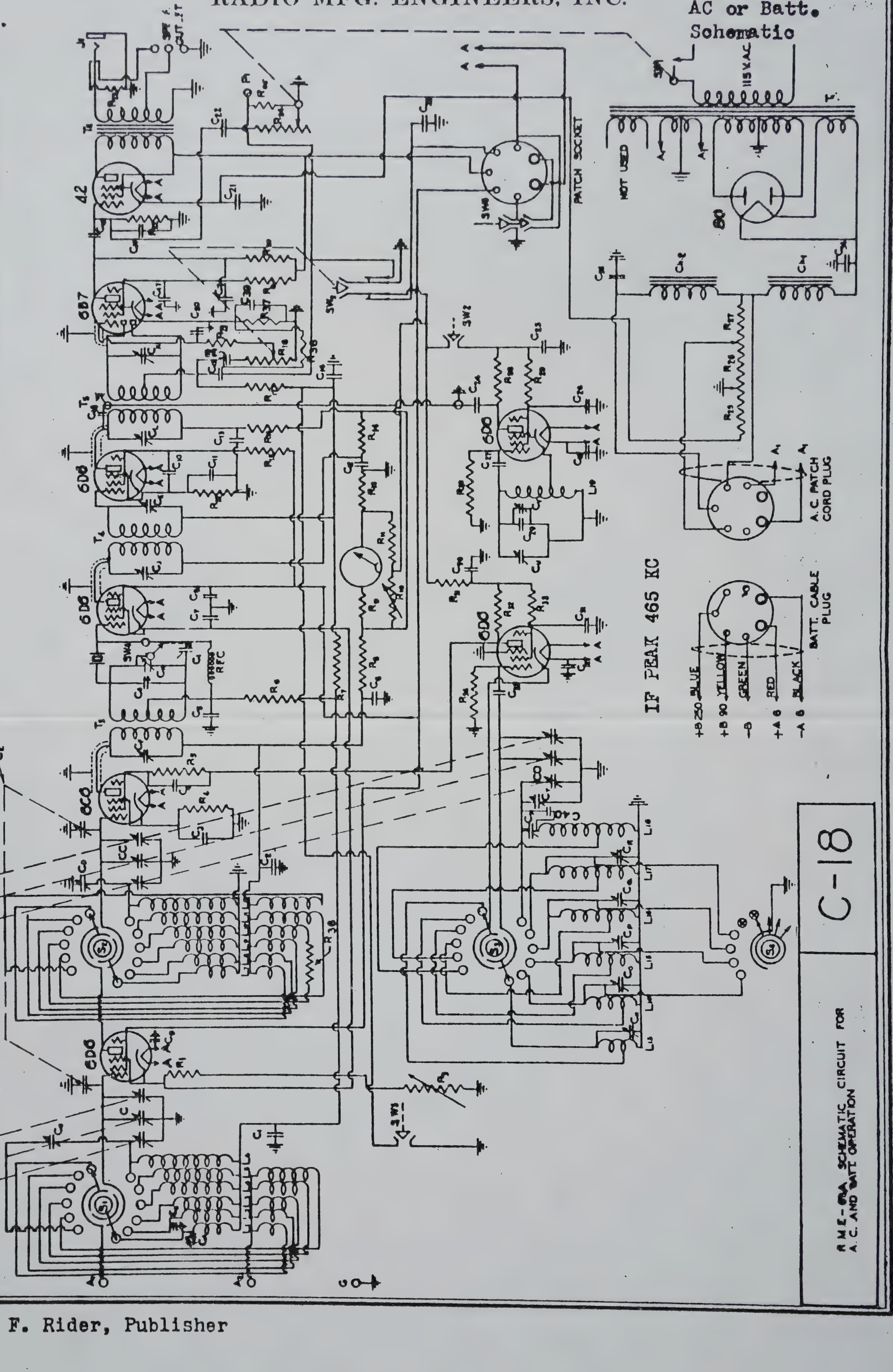
IF PEAK 465 KC

RME 69 SCHEMATIC CIRCUIT *AC-LATE REVISED* C-23

RADIO MFG. ENGINEERS, Inc.
111 HARRISON STREET PEORIA, ILLINOIS

MODEL 69 Revised AC or Batt. Schematic

RADIO MFG. ENGINEERS, INC.



C-18

RME-69A SCHEMATIC CIRCUIT FOR A.C. AND BATT OPERATION

RADIO MFG. ENGINEERS, Inc.
111 HARRISON STREET
PEORIA, ILLINOIS

Radio Classics

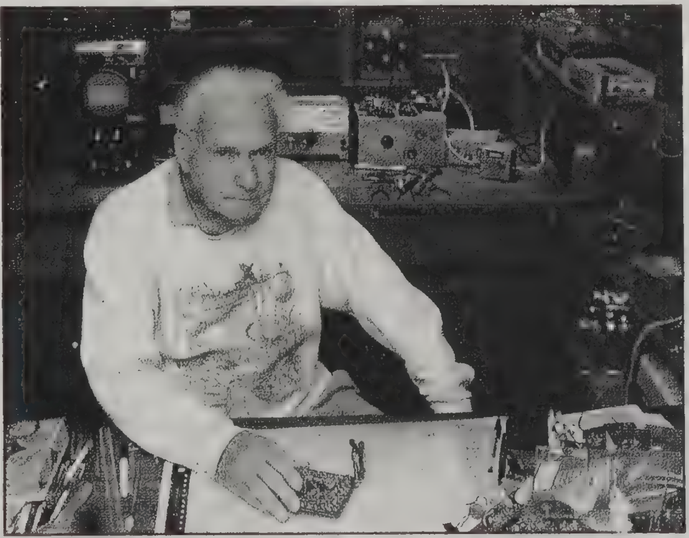
BY JOE VERAS, N4QB

Vintage Gear and Its History

RME—A Pioneer in Amateur Radio Manufacturing

The ham shack/laboratory of W9GLW presented an environment in sharp contrast to the subject of our conversation. Clint Bowman sat in the chair across from me recounting the early days of the Radio Manufacturing Engineers company. Behind him, a single vintage radio, a 1936 RME-69, occupied a place of prominence. Every other piece of communications or test gear visible was clearly solid state, all of it home-brewed, and much of it miniaturized. As we talked about one of the dominant ham companies of the 1930s and '40s, not a single filament glowed in remembrance of days gone by.

The scarcity of vintage tube gear in Clint's shack may be a case of *been there, done that;* it is more likely the mark of a life's work driven by a restless intellect. Constant movement toward the future tends to crowd out relics of the past.



Clint Bowman, W9GLW, at home in his laboratory/ham shack. (Photos by Joe Veras, N4QB)

My meeting with Clint came about in a way that is typically "ham radio." He had corresponded with my friend Bill Kuning, W3BY, sometime back. His letter mentioned the early days with RME, and Bill was kind enough to send me copy of the letter, knowing my interest in the pioneering manufacturers. I noted from the return address on Clint's letter to Bill that he lived not far from my parents' home in suburban Chicago. Not long after that, my dad called to say he had become acquainted with a W9GLW when Clint spotted his K9NA license plate in the local post office parking lot. Almost before the words were out of his mouth, I said, "That's Clint Bowman!" He said, "You *know* Clint?" I told him about the letter. His visits with Clint led to my own, and to this month's column.

A Classic Story

When I visited Clint at his Prospect Heights, Illinois home, it was difficult for me to remain focused on the old-time radio content the title of this column implies. Each new project he showed me was more fascinating than the preceding one.

One such device is his 20 meter, CW/SSB transceiver, the subject of a comprehensive Winter 1995 *Communications Quarterly* article. I can attest to the rig's on-the-air effectiveness. Operating from his winter residence near Clearwater, Florida, Clint joined my dad, K9NA, and me in an SSB QSO one morning in January of this year. He demonstrated the little transceiver's receiving performance during my ham shack visit. Other projects I saw included a varactor-tuned VHF crystal oscillator and an SWR/wattmeter capable of accurate measurement at extremely low power levels.

P.O. Box 1041, Birmingham, AL 35201
e-mail: <n4qb@cq-amateur-radio.com>

All of Clint's working life has somehow involved electronics, much of it outside the realm of amateur radio. His story is a classic one, though: A ham ticket obtained as a boy is something a man can turn into a career. (My Managing Editor will, no doubt, recast the preceding sentence to read: A ham ticket obtained as a youth is something an adult can turn into a career.)

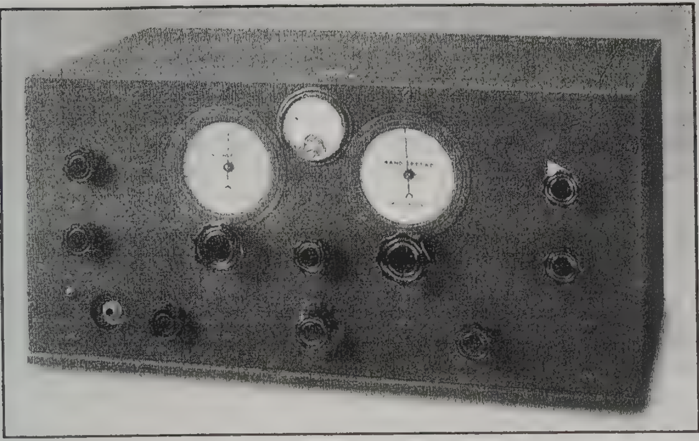
Clint celebrated his 70th year as W9GLW on February 28, 2001. He lived in Centralia, Illinois when first licensed, traveling to Terre Haute, Indiana to take the exam. His father's job transfer took the family to Peoria, Illinois in 1934, where Clint crossed paths with Radio Manufacturing Engineers.

The boxes containing the relocated Bowman family's household goods had barely been unpacked before 19-year-old Clint had an antenna strung up in his new backyard. Nothing much was heard on his home-brew, two-stage regenerative receiver as he first tuned around. The peace and quiet was shattered a couple of days later by the booming signal of W9CSZ, Eric "Shaw" Shalkhauser. A station *that* loud had to be close by, and it wasn't long before Clint discovered W9CSZ and Russ Planck, W9RGH, working in the basement of the nearby Shalkhauser residence. After introductions were made, they showed Clint the new communications receiver they were developing.

Shalkhauser was then an out-of-work Electrical Engineering professor from Bradley Polytechnic Institute, Russ Planck his former pupil. A neighbor able to handle a soldering iron was a valuable asset, and Clint was recruited, on the spot, to join the fledgling company. His first paychecks amounted to $10 for a 48-hour week. Clint observed, "It was the Depression. If you got a job, you put your nose to the grindstone and tried to keep it."

The Growth of RME

The RME staff at that time included the two principals and Clint. It soon grew to four with the addition of Russ Planck's cousin. The receiver they assembled then was the RME-9. Only four of these were produced, all of them going to the Press Wireless company for use in its overseas news service. The 9-tube, band-switching set tuned from .55 MHz to 22 MHz in five ranges and featured a built-in power supply. A single "airplane" dial dominated the front panel, and bandspread tuning was accomplished with a mechanical vernier.



The RME-9D was Radio Manufacturing Engineers' first product for the amateur market. The knobs on the receiver pictured are not original and belong to a later vintage RME.

It is believed that all these sets were later reworked with modifications, including the addition of a second airplane dial and electrical band spread.

A new set, commissioned the RME-9D, included the above additions to the Model 9 as well as a signal-level meter, a panel-mounted peaking control for the RF amplifier and mixer circuits, and a cast-aluminum chassis. A move from Shaw's basement to a larger, storefront facility accompanied the introduction of the new model. While in the converted grocery store, the staff grew to about 15. A July 1, 1934 10 meter QSO between W9GLW and W2TP provided the inspiration for adding coverage of that band to the 9D. The broadcast band was dropped in favor of extending the tuning range up to 32 MHz.

RME-9D production was stopped in December 1935 to await the introduction of the RME-69 early the following year. Working under the supervision of Russ Planck, Clint began assembly of the 69 prototype in August of '35. New dial designs with planetary drive mechanisms were incorporated along with a signal (carrier) level meter calibrated in units from 1 to 9 as well as decibels. S9 (R9 in those days) was equal to approximately 100 microvolts across the antenna terminals of the RME-69.

The new model proved to be the most popular receiver the company would ever produce and appeared in a number of variations during its five-year run. These included AC-only and AC/battery versions, each with and without a noise limiter. A model incorporating the company's DB-20 preselector into a common cabinet was also made. The RME-69 covers .55–31.5 MHz in six bands and has a 465 kHz IF. Of particular note, many versions of the 69 had no labels for the front-panel knobs and switches.

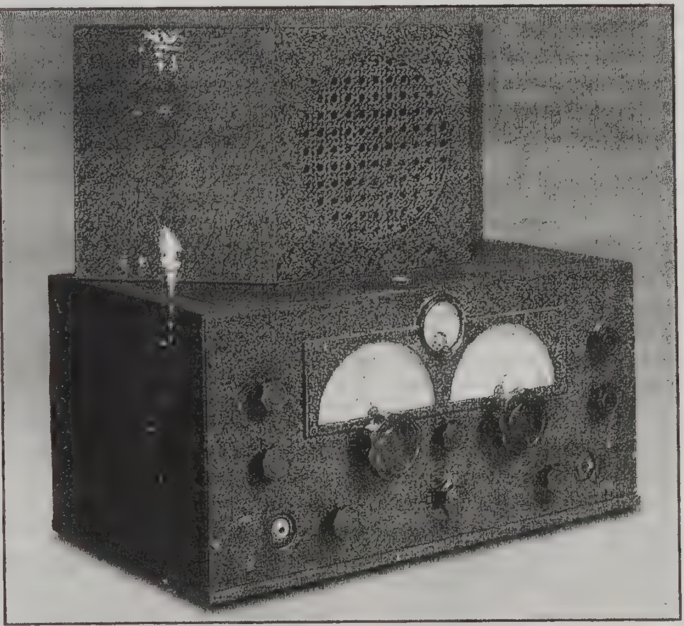
About the time the new receiver was introduced, RME moved again, this time to a proper factory facility. This location served the company as long as it remained in Peoria.

Shalkhauser and Planck, bright and capable men, each brought something different to the RME operation. Clint remembers Planck as a knowledgeable and down-to-earth engineer, a very practical man. Shalkhauser tended to be the business brains of the operation. When a new product was in the developmental stage, the men did not always see eye-to-eye on every issue or feature. When their differences were ironed out, the resulting product worked well and kept them in the game with much larger competitors.

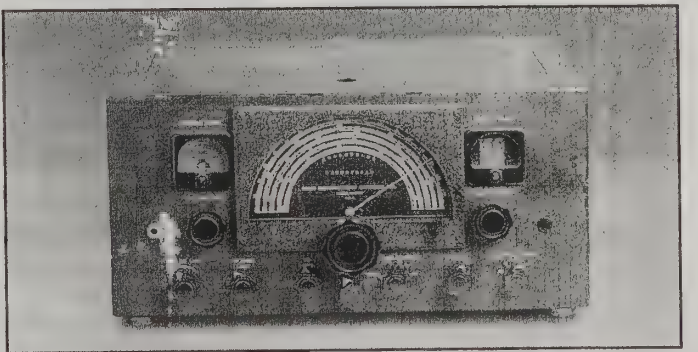
In August of 1939 a new model, the RME-70, was introduced, but continuing orders for the 69 prompted RME to produce both models simultaneously until 1940. In reality, except for minor circuit, tube, and cosmetic changes, the 70 differed little from its predecessor. May 1940 saw both the 69 and 70 replaced by the RME-99. The new receiver featured a new front-panel layout and a fully calibrated band-spread dial for the 80, 40, 20, and 10 meter amateur bands. Both the basic look of the 99 and its loktal tubes would remain RME signatures for the next decade.

On August 4, 1940 the Hamfesters Picnic, an annual affair put on by the Hamfesters Radio Club of Chicago, was the forum for an interesting demonstration. The U.S. Navy had arranged to make test transmissions from an aircraft to show off its evolving air-to-ground communications. Receiving stations were set up at the hamfest site by participating manufacturers. Difficult conditions turned the demonstration into a competitive affair.

Some major players had direct representation. Bill Halligan and several people from his company brought along the latest Hallicrafters equipment. Other equipment, including National and Hammarlund, was set up by factory personnel, sales reps, or local dealers such as Allied Radio. The ground station set up by the Navy was unable to copy signals from the airplane. Of all the receivers employed that day, only an RME-69, manned by Shalkhauser himself, achieved solid copy. The signal from the RME was so good, in fact, that the audio was piped from the receiver into the public-address sys-



The RME-69 receiver presents a somewhat baffling front panel to the new user; none of the controls are labeled!



The Model 99, introduced in 1940, also appeared in a sloping-front-panel Deluxe *version.*

tem and broadcast to the 2500 in attendance.

Just before the onset of World War II, the RME-41/43 series replaced the 99. The RME-41 lacked the 43's crystal filter and S-meter, but could be upgraded to the more expensive model with the addition of factory-supplied modules.

The months preceding the war found Clint Bowman and RME on diverging paths. Clint took a civilian job with the Signal Corps, and RME converted its production lines to build electronics for the Navy.

Epilogue

RME's name is primarily associated with amateur receivers. The company flirted briefly with producing transmitters for the amateur radio market in 1936. Prototypes for Models 3R9, CT-100, and 5T5 were built and advertised. Few, if any, sales resulted, and RME withdrew from that venture within the year. The transmitter designs were the work of Russ Planck.

Before the Second World War, RME also produced receiver-related accessories such as converters and preselectors. Post-war, its accessory line expanded to include other items for the amateur market. The RME name appeared again briefly on an HF transmitter, VFO, and VHF transmitter manufactured by Globe (GC Electronics) in the early 1960s. By this time, the famous initials were a business commodity to be bought and sold and had no relation to the Radio Manufacturing Engineers company.

Although this month's column focuses on RME before World War II, a few words of epilogue are in order. After the RME-45 series, with roots firmly planted in the company's pre-war models, ran its course, the RME-50 and RME-79 (both borrowing heavily on the 45's design) were introduced. An entry-level receiver, the RME-84, made an appearance in 1946. The year 1953 saw Shalkhauser's retirement, the acquisition of the company by Electro-Voice, and movement of the RME facility to nearby Washington, Illinois. Ham radio slipped into the past, and the machinery began cranking out phonograph cartridges instead.

Russ Planck stayed on with the company and eventually became manager of E-V's Newport, Tennessee plant. Al Kahn, K4FW, the founder of Electro-Voice, remembers Planck as an extremely capable man, and a nice one.

As an Electro-Voice subsidiary, RME produced several new receivers. The name-plate was then based in Buchanan, Michigan with other E-V operations. The RME-4300 debuted in 1955, followed by the 4350 two years later. Electro-Voice announced the RME 6900 in January 1960. The advertisements mentioned the receiver was "Engineered under the supervision of Russ Planck, W9RGH." I have not been able to confirm that statement's truth. It is *possible* a Model 6902 receiver was marketed by GC Electronics when it owned the RME name. If anyone out there knows more about this set, or has seen one, please contact me.

My thanks to the following for allowing me to photograph the gear illustrated in this month's column: Marty Reynolds, AA4RM, RME-69 and speaker; Bill Kuning, W3BY, RME-9D; and Herman Cone, N4CH, RME-99.

My gratitude also to Clint Bowman, W9GLW, for his recollections of RME and the wealth of both verbal and written material he provided. Al Kahn, K4FW, kindly filled in information on the RME/Electro-Voice days.

A tip of the N4QB callsign cap and my sincere thanks to Jim Jorgensen, K9RJ, and Ron Payne, WA6YOU, as well as their families. Their hospitality was superb and the fellowship great during my recent visits to their homes for calendar/book photo shoots.

My interest in RME is long-standing and an emotional one as well; an RME-45B is the proud centerpiece in a 1958 photo of my Novice station. I would enjoy hearing from anyone out there with additional information on the company or its products. 73, Joe, N4QB

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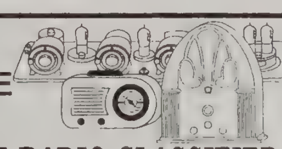

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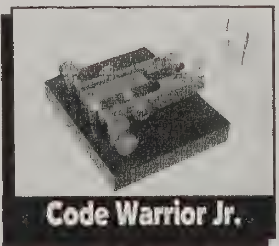

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Electro-Voice
ELECTRO-VOICE, INC.
BUCHANAN, MICHIGAN

Specifications and Instructions
RME Model DB23 Preselector

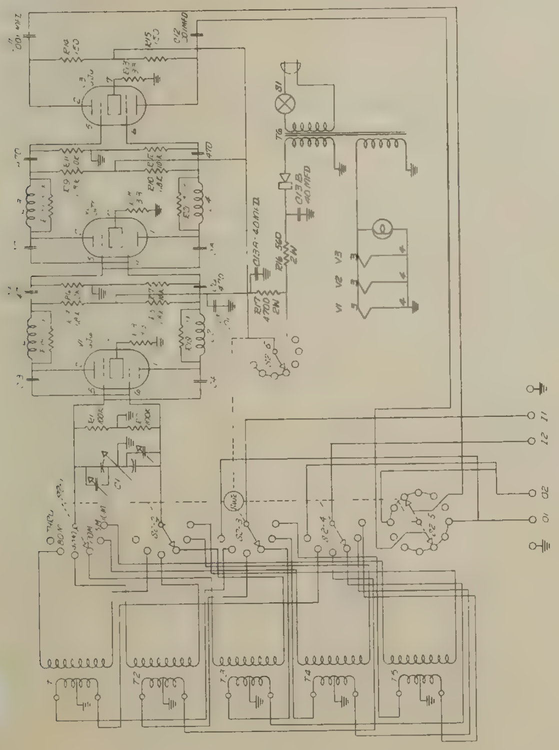
The DB23 preselector is a low-noise, radio-frequency amplifier which can be used to substantially improve receiver performance on the following amateur radio bands:

3.5 mc to 4.0 mc
7.0 mc to 7.3 mc
14.0 mc to 14.5 mc
21.0 mc to 21.5 mc
26.0 mc to 30.0 mc

The DB23 consists of one tuned input circuit, which matches input impedance of 75 ohms unbalanced or 300 ohms balanced, followed by two stages of low-noise, neutralized, broadband push-pull 6J6 amplifiers. Finally, a push-pull 6J6 impedance matching stage delivers the amplified signal to the receiver with output impedance of 150 ohms unbalanced or 300 ohms balanced. Input and output impedance values actually encountered can differ within reasonable limits without seriously affecting performance.

The voltage gain which can be expected from the DB23 varies somewhat with the band in use and the output impedance selected (balanced output gives 6 db more gain). Minimum gain, using a balanced output connection, will be about 26 db, while maximum gain, using the same output circuit, will be around 35 db. The tuned circuit in the DB23 adds selectivity to the receiving system. The amount of image rejection due to the DB23 varies with the frequency, and can be as high as 30 db on the lower frequencies.

Because the DB23 is a low-noise device, an improvement in signal plus noise-to-noise ratio (or usable gain) is experienced. This feature is quite pronounced with the less sensitive receivers, but even the better receivers will benefit. An improvement of 7.5 db in signal plus noise-to-noise ratio is not unusual.



Schematic Diagram

SPECIFICATIONS

Tubes:	V1 6J6 R.F. amplifier V2 6J6 R.F. amplifier V3 6J6 R.F. impedance matching amplifier
Power Supply:	Self contained; uses transformer and selenium rectifier
Input Impedance:	75 ohms unbalanced 300 ohms balanced
Output Impedance:	150 ohms unbalanced 300 ohms balanced
Gain:	30 db (average)
Frequency Range:	3.5 to 4.0 mc; 7 to 7.3 mc; 14 to 14.5 mc; 21 to 21.5 mc; 26 to 30 mc.
Size:	7⅝ in. wide x 6 in. deep x 5 in. high
Weight:	6½ lb, shipping

APRIL 1960

unbalanced

Electro-Voice Specifications and Instructions / RME Model DB23 Preselector

The voltage chart below is for reference when servicing:

	Band Switch in 40M Position	Band Switch in 80M Position
V1 pin 1	78 volts	40 volts
V1 pin 2	78	40
V1 pin 7	.50	.20
V2 pin 1	78	40
V2 pin 2	78	40
V2 pin 7	.50	.20
V3 pin 1	90	44
V3 pin 2	90	44
V3 pin 7	.65 59	.25
At Rect. Filter	110 [illegible]	46 58

All voltages measured to ground with a 20,000 ohm-per-volt meter and are positive.

Voltage Chart

Warranty

ELECTRO-VOICE, INC. warrants each new product manufactured by it to be free from defective material or factory workmanship and agrees to repair or exchange any part thereof which under normal installation, use and service, discloses such defect. Our obligation under this warranty is limited to repairing or exchanging any defective part, with the exception of tubes, if that part is returned, transportation prepaid, within ninety (90) days from the date of original purchase by the consumer through our authorized dealer from whom the consumer purchased this product. This warranty does not apply to any of our products which have been repaired or altered in any way so as, in our judgment, to injure their stability or reliability, or which have been subject to misuse, negligence, or accident, or which have had the serial number altered, effaced, or removed. Neither does this warranty apply to any of our products which have been connected, installed, or adjusted otherwise than in accordance with the instructions furnished by us. Accessories not of our manufacture used with this product are not covered by this warranty.

This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sales of our product.

INSTRUCTIONS FOR SET-UP AND OPERATION

SWITCHES—The switching arrangement in the DB23 permits connection of the antenna to the preselector or directly through to the receiver when the use of the preselector is not desired. The input and output terminals of the DB23 are coded for proper operation of this feature. The input terminals are marked IN 1, IN 2, and G (ground), while the output terminals are marked OUT 1, OUT 2, and G. Terminal IN 1 will be connected to terminal OUT 1 and terminal IN 2 will be connected to terminal OUT 2 when the bandswitch is in the "THRU" position. Therefore, when using an unbalanced antenna, it is important to use a paired set of terminals i.e., for an antenna input of IN 1 and G, the output should be taken from terminals OUT 1 and G. If a balanced antenna connection is used (terminals IN 1 and IN 2), it is important to use a balanced receiver input connection for a proper antenna match when the DB23 is set to the "THRU" position. Finally, the DB23 will permit the use of a balanced antenna system into an unbalanced receiver input, or vice versa, but it should be remembered that this will result in unbalance of either the antenna or receiver input when the bandswitch is in the "THRU" position.

Because the DB23 is an amplifier, incorrect installation may result in a part of its output being fed back into the input circuits with regeneration or active oscillation resulting. Therefore, care must be exercised in installing the DB23. Use a good ground between the DB23 and the receiver chassis (a braided strap has low inductance and is highly desirable). Keep connecting leads as short as possible and keep antenna input lead well separated from output leads. These precautions will result in a very stable system.

INSTALLATION —

1. Connect line cord to 117 V, 50 - 60 cycle power source.
2. Connect antenna to proper input terminals on DB23 (see paragraph on switches). For 75-ohm unbalanced input use terminals IN 1 and G, or IN 2 and G. For 300-ohm balanced input use terminals IN 1 and IN 2.
3. Connect output of DB23 to receiver. For 150-ohm unbalanced output use terminals OUT 1 and G or OUT 2 and G (note if IN 1 and G are used, select OUT 1 and G). For 300-ohm balanced output use terminals OUT 1 and OUT 2. Use a short length of coax or a twisted pair for unbalanced output. For balanced output a twisted pair or 300-ohm twin lead is suitable.
4. Provide a good ground between the DB23 and the receiver.

OPERATION —

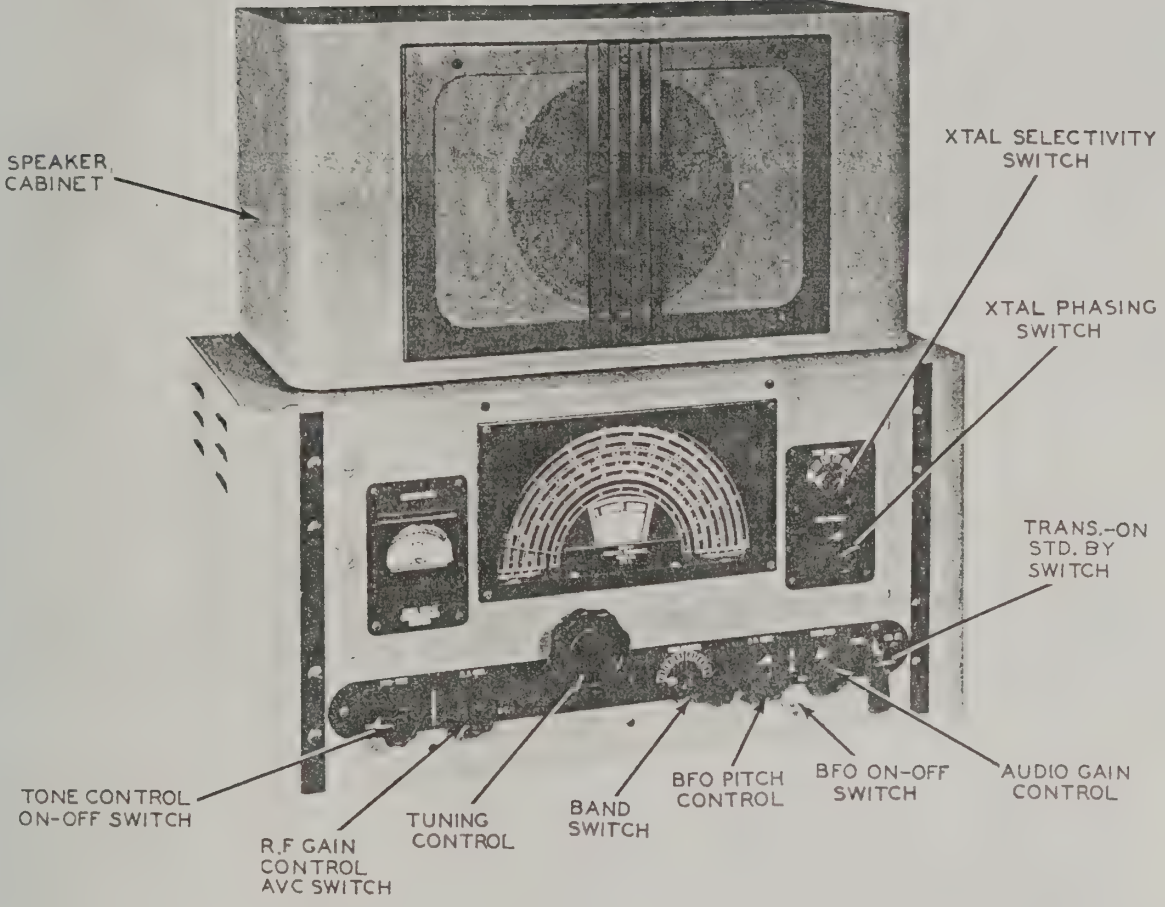
1. Turn the "ON - OFF" switch (lower right) to the "ON" position. The dial light should be illuminated indicating the presence of power.
2. Turn the band selector switch (center) to the desired frequency band.
3. Tune receiver to desired frequency.
4. Adjust peaking knob (lower left) for maximum signal. Peaking adjustment should be made each time the frequency is appreciably changed. Two positions of the peaking control may produce a peak in background noise. This is due to image response of the receiver. Always tune peaking knob to most counter-clockwise peak.

MAINTENANCE—The DB23 should require little maintenance. There are two basic adjustments which may be made:

1. Trimmers on the tuning condenser (C1) which are used to trim the input circuits to the proper frequency coverage. These need only be checked if coils are replaced. They are adjusted to give proper frequency coverage on the 3.5 to 4.0-mc band.
2. The neutralizing condensers (twisted wires C3, C4, C7, and C8) are used to keep the triode stages from oscillating. Should oscillations occur, first check the antenna and receiver connections as well as the bond of the DB23 chassis to the receiver chassis. If oscillation persists, remove the DB23 from its cabinet by removing the knobs and the rubber feet on the bottom. Then, adjust each twisted wire condenser by twisting until oscillation stops. Finally, check each band of frequencies and readjust twisted wire condensers if necessary. Usually one adjustment on the 26 to 30-mc band is sufficient (new tubes are the most likely cause for adjustment).

RME RADIO MFG. ENGINEERS DIVISION
EV ~~ELECTRO-VOICE,~~ INC. / BUCHANAN, MICHIGAN

~~Part No. 53144~~
~~Printed in U.S.A.~~



R.M.E. MODEL 45

TRADE NAME	RME Model 45
MANUFACTURER	Radio Manufacturing Engineers, Inc., Peoria (6), Ill.
TYPE SET	AC Operated Multiband Communications Superheterodyne Receiver
TUBES (NINE)	Types, 7B7 RF Amp., 7J7 Converter, (2) 7B7 1st & 2nd IF Amp., 7B6 Det.-BFO, 7C7 AF Amp., 7A6 Noise Limiter, 7C5 Power Output, 80 Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	1.53 Amp. @ 117 Volts AC
TUNING RANGES -	BROADCAST - Band 1 - .540-1.6 MC, Band 2 - 1.6-2.9 MC, Band 3 - 2.9-5.4 MC, Band 4 - 5.4-9.8 MC, Band 5 - 9.8-18 MC, Band 6 - 18-33 MC.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		RME PART No.	STANDARD REPLACEMENT		
1	RF Amp.	7B7	7B7	8AR	
2	Converter	7J7	7J7	8AK	
3	1st IF Amp.	7B7	7B7	8V	
4	2nd IF Amp.	7B7	7B7	8V	
5	Det.-Beat Osc.	7B6	7B6	8W	
6	1st AF Amp.	7C7	7C7	8V	
7	Noise Limiter	7A6	7A6	7AJ	
8	Power Output	7C5	7C5	6AA	
9	Rectifier	80	80	4C	

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	RME PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
50A	1 Meg.	1		MR53	D13-137	M-53-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 50A per instructions
C	Switch			M26	41	SW-A	" " " " "
51A	30KΩ	1					RF Gain Control & AVC Switch
B	Shaft						
C	Switch						
52A	250KΩ	1		UM149	D11-130	M-55-S	Audio Gain Control
B	Shaft			Not Req.	A	Not Req.	Attach to 52A per instructions
53	200Ω	1		C200P	W-200	43-200	Meter Adj. Control

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RME PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	
10A	15	450		EL-344	AF44J	UP6CJ47	FP390	DY-3x15-450	■ Filter
B	10	450							"
C	15	450			PRS450-10				▲ "
11	20	25		TA-25	PRS25-25	BR252A	TC26	M-25-25	Output Cath. Bypass
12	20	25		TA-25	PRS25-25	BR252A	TC26	M-25-25	1st AF Cath. Bypass
13	1	200		TC-10	484-1	DT4W1	TP422	S-4-1M	AVC Diode Filter
14	1	400		TC-10	484-1	DT4W1	TP422	S-4-1M	RF Bypass Pwr. Supp.
15	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Tone Compensation
16	.1	600		TC-1	684-.1	DT6P1	TP418	S-6-1	Audio Coupling
17	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st AF Screen Bypass
18	.1	600		TC-1	684-.1	DT6P1	TP418	S-6-1	Audio Coupling
19	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter
20	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	BFO Plate Decoupling
21	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	2nd IF Plate Decoup.
22	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	2nd IF Screen Bypass
23	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	2nd IF Cath. Bypass
24	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter
25	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st IF Plate Decoup.
26	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st IF Screen Bypass
27	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st IF Cath. Bypass *
28	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter
29	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Plate Decoup.
30	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Cath. Bypass
31	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Screen Bypass
32	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Plate Decoupling
33	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Screen Bypass
34	.1	600		TC-1	684-.1	DT6P1	TP418	S-6-1	AVC Filter
35	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Osc. Bypass
36	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Cath. Bypass
37	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter *
38	250	500		1FM-325	1468-00025	5W5T25	MC240	M0.5-325	IF Bypass Vol. Cont.
39	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	IF Bypass Diode
40	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	BFO Coupling
41	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	" "
42	50	500		MS-45	1469-00005	5R5Q5	MCB225	MOS.5-45	Fixed Trimmer
43	50	500		MS-45	1469-00005	5R5Q5	MCB225	MOS.5-45	Fixed Trimmer
44	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	Osc. Grid Capacitor
45	550	500							Fixed Padder
46	600	500							" "
47	1300	500							" "
48	1700	500							" "
49	3900	500							" "
127	250	500		1FM-325	1468-00025	5W5T25	MC240	M0.5-325	Tone Compensation *

*Not used in all models.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RME PART No.	IRC PART No.	
54	100KΩ	1/3		BTS-100K	Br.-Blk.-Blue AVC Network
55	50KΩ	1		BTA-47K	Grn.-Blk.-Or. Bleeder
56	150Ω	1/3		BW-½-150	Br.-Grn.-Br. RF Cathode
57	2200Ω	1/3		BTS-2200	Red-Red-Red RF Screen Dropping
58	2000Ω	1/3		BTS-2200	Red-Blk.-Red Mixer Screen Dropping
59	2200Ω	1/3		BTS-2200	Red-Red-Red RF Plate Decoupling
60	300Ω	1/3		BW-½-270	Or.-Blk.-Br. Converter Cathode
61	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Oscillator Grid
62	2000Ω	1/3		BTS-2200	Red-Blk.-Red Mixer Plate Decoupling
63	2000Ω	1/3		BTS-2200	Red-Blk.-Red Oscillator Plate Decoupling-See Note
64	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. 1st IF Grid -See Note 2
65	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. AVC Network
66	2200Ω	1/3		BTS-2200	Red-Red-Red 1st IF Screen Dropping
67	2200Ω	1/3		BTS 2200	Red-Red-Red 1st IF Plate Decoupling
68	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. AVC Network
69	300Ω	1/3		BW-½-270	Or.-Blk.-Br. 2nd IF Cathode
70	2200Ω	1/3		BTS-2200	Red-Red-Red 2nd IF Screen Dropping
71	2200Ω	1/3		BTS-2200	Red-Red-Red 2nd IF Plate Decoupling
72	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Diode Load
73	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Diode Load
74	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
75	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. BFO Grid
76	250KΩ	1/3		BTS-270K	Red-Grn.-Yl. BFO Plate Decoupling
77	250KΩ	1/3		BTS-270K	Red-Grn.-Yl. Noise Limiter Network
78	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Tone Compensation
79	1000Ω	1/3		BTS-1000	Br.-Blk.-Red AF Cathode
80	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. AF Screen Dropping
81	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. AF Plate Load
82	250KΩ	1/3		BTS-270K	Red-Grn.-Yl. Output Grid
83	240Ω	1		BW-1-220	Red-Yl.-Br. Output Cathode
84	35Ω	1/3		BW-½-33	Or.-Grn.-Blk. Headphone Shunt
85	20KΩ	1/3		BTS-22K	Red-Blk.-Or. Decoupling
86A	5500Ω	10		ABA-10,000	Voltage Dropping-See Note 3
B	4500Ω				Bleeder
87	18Ω	1/3		BW-½-18	Br.-Gray-Blk. Parasitic Suppressor-See Note 1
88	250KΩ	1/3		BTS-270K	Red-Grn.-Yl. Crystal Filter Network
89	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. Crystal Filter Network
90	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Crystal Filter Network
91	20KΩ	1/3		BTS-22K	Red-Blk.-Or. Crystal Filter Network
92	1500Ω	1/3		BTS-1500	Br.-Grn.-Red Series "S" Meter
93	18Ω	1/3		BW-½-18	Br.-Gray-Blk. Series Meter Pilot Light-See Note 1

Note 1 - Not used in all models.
Note 2 - Not used in models having crystal filter unit.
Note 3 - On IRC replacement set slider 4500Ω from one end.

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA			INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000~)	RME PART NO.	STANCOR PART NO.	THORDARSON PART NO.	
94	.116A	220Ω	12 Henries		C-1710	T20C54 ‡	‡ Drill one new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RME PART No.	STANCOR PART No.	THORDAR'N PART No.	INSTALLATION NOTES
95	117V AC @ 1.53A	670V CT @ .116A	5.3V AC @ 1.8A	6.5V AC @ 2.2A		P-6013	T22R06	

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RME PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
96	3400Ω	4Ω	170Ω	.4Ω		A-3825 ‡	T22S60 ‡		‡ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			RME PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-117		
97	PM	4Ω		Mod. P8-T		
	CONE DIA.	VC DIA.				
98	7-3/4"	7/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	RME PART No.	MEISSNER PART No.	
	Band					
99	Ant. Coil #1	1.5Ω	3.2Ω			
100	" " #2	.5Ω	1.5Ω			
101A	" " #3	0Ω	.2Ω			Items 101A and 101B wound on same form.
B	" " #4	0Ω	0Ω			
102A	" " #5	0Ω	0Ω			Items 102A and 102B wound on same form.
B	" " #6	0Ω	0Ω			
103	RF Coil #1	1.5Ω	3.5Ω			
104	" " #2	.5Ω	1.5Ω			
105A	" " #3	.2Ω	.2Ω			Items 105A and 105B wound on same form.
B	" " #4	0Ω	0Ω			
106A	" " #5	0Ω	0Ω			Items 106A and 106B wound on same form.
b	" " #6	0Ω	0Ω			
107	Osc. Coil #1	.5Ω	2.3Ω			
108	" " #2	.5Ω	1.5Ω			
109A	" " #3	0Ω	.2Ω			Items 109A and 109B wound on same form.
B	" " #4	0Ω	.1Ω			
110A	" " #5	0Ω	0Ω			Items 110A and 110B wound on same form.
B	" " #6	0Ω	0Ω			
111	BFO	1Ω	3Ω			
112	XTAL Filter Coil		6Ω			
113	Input IF	3Ω	4.5Ω			
114	Inter. IF	7.8Ω	3Ω			
115	Output IF	3Ω	7.8Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					RME PART No.		
116	Screw	6-8	0.25	Blue			Type 46
117	Bayonet	6-8	0.15	Brown			Type 47
118	Bayonet	6-8	0.15	Brown			Type 47
119	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	RME PART No.	NOTES
120	Switch		Stand-by, 3 Position, 2 Pole
121	Bandswitch		
122	Switch		XTAL Selectivity, 5 Pos., 1 Pole
123	Var. Capacitor		XTAL Phasing
124	Var. Capacitor		BFO
125	4 Gang Var. Cap		
126	Crystal		
128	Switch		BFO, SPST

DISASSEMBLY INSTRUCTIONS

FOR ALIGNMENT ONLY

1. For alignment remove six Phillips head screws from bottom of cabinet and remove bottom plate.

COMPLETE DISASSEMBLY

2. Remove two self-tapping screws from bottom of cabinet.
3. Remove eight machine screws and panel strips from front of cabinet and two Phillips head screws.
4. Slide chassis from cabinet.
5. Remove five hex nuts from bottom of chassis.
6. Remove bottom chassis cover.
7. Remove two nuts and two self-tapping screws from coil shield on top of chassis, remove shield.

REMOVAL OF CRYSTAL COMPARTMENT

8. Remove XTAL knobs from front of chassis. Remove four Phillips head screws from XTAL name plate and remove plate.
9. Remove two self-tapping screws from XTAL compartment on top of chassis. Unplug XTAL compartment from socket on chassis.
10. Remove eight self-tapping screws from shield on XTAL compartment.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use "R" meter on receiver for output indication when aligning B.O. switch, crystal selectivity switch should be off, trans.-std. by-on switch should be on, and RF gain fully clockwise. Output of signal generator no higher than necessary to obtain output reading. Audio gain should be sufficiently clockwise to enable monitoring of signal. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of center section of variable. Low side to chassis.	455KC	1	Variable fully closed	See pre-alignment instructions.	A1,A2, A3,A4, A5.	Adjust for maximum reading.

Turn crystal selectivity switch to position 5. Tune signal generator for peak on "R" meter. This will be approximately 455KC. The signal generator is now accurately tuned to the crystal frequency. Turn the crystal selectivity switch to "off" and repeat last step making certain that the setting of the signal generator remains unchanged.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of center section of variable. Low side to chassis.	455KC	1	Variable fully closed	See pre-alignment instructions.	A6	Turn B.O. switch on and set pitch control vertical. Adjust A6 for zero beat.
200Ω	High side to ant terminal. Low side to chassis.	600KC	"	600KC	"	A7	Adjust for maximum reading.
200Ω	"	1400KC	"	1400KC	"	A8	Adjust for maximum reading. Repeat last two steps until no further improvement can be made.
200Ω	"	"	"	"	"	A9, A10	Adjust for maximum reading.
200Ω	"	600KC	"	600KC	"	A11, A12	Adjust for maximum reading. Repeat last two steps until no further improvement can be made.
200Ω	"	1800KC	2	1800KC	"	A13	Adjust for maximum reading.
200Ω	"	2800KC	"	2800KC	"	A14	Adjust for maximum reading. Repeat last two steps until no further improvement can be made.
200Ω	"	"	"	"	"	A15,A16	Adjust for maximum reading.
200Ω	"	1800KC	"	1800KC	"	A17,A18	Adjust for maximum reading. Repeat last two steps until no further improvement can be made.
200Ω	"	5MC	3	5MC	"	A19	Adjust for maximum reading.
200Ω	"	5MC	"	5MC	"	A20,A21	"
200Ω	"	9MC	4	9MC	"	A22	"
200Ω	"	"	"	"	"	A23,A24	"
200Ω	"	16MC	5	16MC	"	A25	"
200Ω	"	"	"	"	"	A26,A27	"
200Ω	"	30MC	6	30MC	"	A28	"
200Ω	"	"	"	"	"	A29,A30	

Tune in a broadcast station playing music. Turn crystal selectivity switch to position 5 and tune in station accurately. Adjust crystal phasing control for minimum background noise. Turn selectivity control to position "1". Adjust A31 for most natural reproduction of music.

ANTENNA

The terminals on the rear apron marked "A-A-G" are for the antenna connection. When the receiver leaves the factory there is a jumper between one of the "A" posts and the "G" post. Good results may be obtained by connecting a wire 50 to 75 feet long to the other "A" post. If a 2 wire feeder system is used the jumper is removed and the two feeders are connected to "A" and "A". A ground may be connected to the "G" post if it improves reception.

RELAY AND BREAK-IN TERMINALS

On the rear apron are two sets of contacts marked "R" and "B". The pair marked "B" are in series with the plate supply. This pair must always be shorted when the receiver is being used, either by a relay or by a jumper if a remote control feature is not used. This jumper is in place when the set leaves the factory.

The pair marked "R" are relay control terminals. This pair is shorted when the receiver stand-by switch is turned to "Trans". It may be used to control an external relay in conjunction with a suitable external voltage.

CONTROLS SET AS FOLLOWS:
LINE-TONE CONTROL MAXIMUM CLOCKWISE
RF GAIN ON AVC
BAND SELECTOR AT #1
BFO OFF EXCEPT FOR 7B6 READINGS
AUDIO GAIN AT MAXIMUM

VOLTAGE READINGS

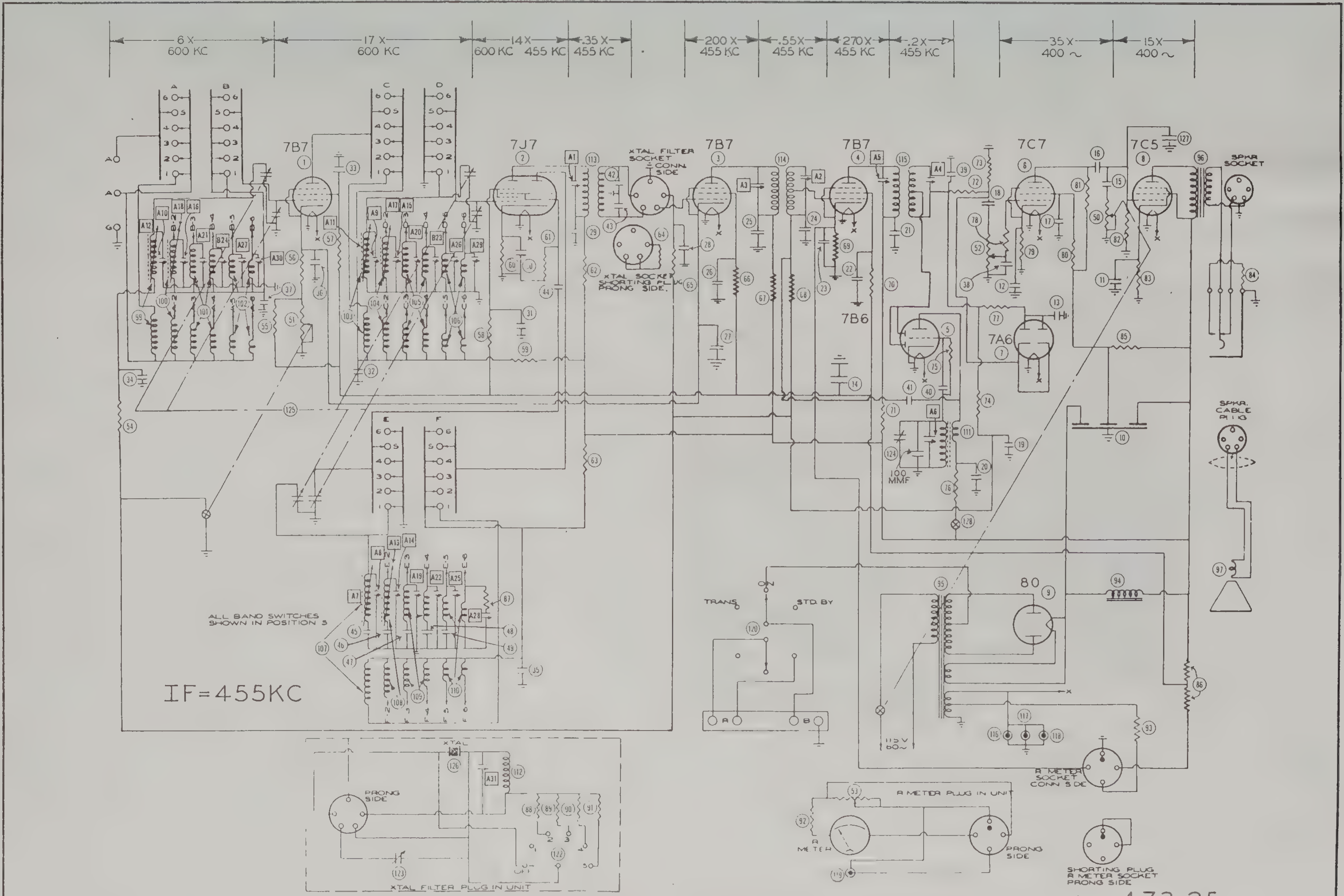
ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	7B7	0V.	290 V.DC	115 V.DC	3 V.DC	0V.	-.1 V.DC	3 V.DC	6.5 V.AC
2	7J7	0V.	308V.DC	195V.DC	-3V.DC	115 V.DC	0V.	3.1 V.DC	6.5 V.AC
3	7B7	0V.	290V.DC	115V.DC	3 V.DC	0V.	-.1 V.DC	3 V.DC	6.5 V.AC
4	7B7	0V.	295 V.DC	115 V.DC	2.5V.DC	0V.	-.1 V.DC	2.5 V.DC	6.5V.AC
5	7B6	0V.	140 V.DC	-4.5 V.DC	0V.	-.5 V.DC	-.5 V.DC	0V.	6.5V.AC
6	7C7	0V.	180 V.DC	60 V.DC	1.5 V.DC	0V.	0V.	1.5 V.DC	6.5V.AC
7	7A8	0V.	-.2 V.DC	-.55 V.DC	0V.	0V.	-.55 V.DC	-.2 V.DC	6.5V.AC
8	7C5	0V.	300 V.DC	308 V.DC	0V.	0V.	0V.	15 V.DC	6.5V.AC
9	80	338V.DC	335V.AC	335V.AC	338 V.DC				

RESISTANCE READINGS

ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	7B7	0 Ω	11.5 KΩ	6.4 KΩ	140 Ω	0 Ω	1 MEG.	140 Ω	.2 Ω
2	7J7	0 Ω	11.5 KΩ	27 KΩ	51 KΩ	5.5 KΩ	2.8 Ω	250 Ω	.2 Ω
3	7B7	0 Ω	11.5 KΩ	6.4 KΩ	140 Ω	0 Ω	1 MEG.	140 Ω	.2 Ω
4	7B7	0 Ω	11.5 KΩ	6.4 KΩ	210 Ω	0 Ω	1 MEG.	210 Ω	.2 Ω
5	7B6	0 Ω	225 KΩ	90 KΩ	0 Ω	103 KΩ	103 KΩ	0 Ω	.2 Ω
6	7C7	0 Ω	103 KΩ	850 KΩ	900 Ω	0 Ω	280 KΩ	900 Ω	.2 Ω
7	7A8	0 Ω	53 KΩ	350 KΩ	INF.	0 Ω	350 KΩ	53 KΩ	.2 Ω
8	7C5	0 Ω	9.5 KΩ	9.1 KΩ	INF.	0 Ω	240 KΩ	225 Ω	.2 Ω
9	80	9.5 KΩ	103 Ω	95 Ω	9.5 KΩ				

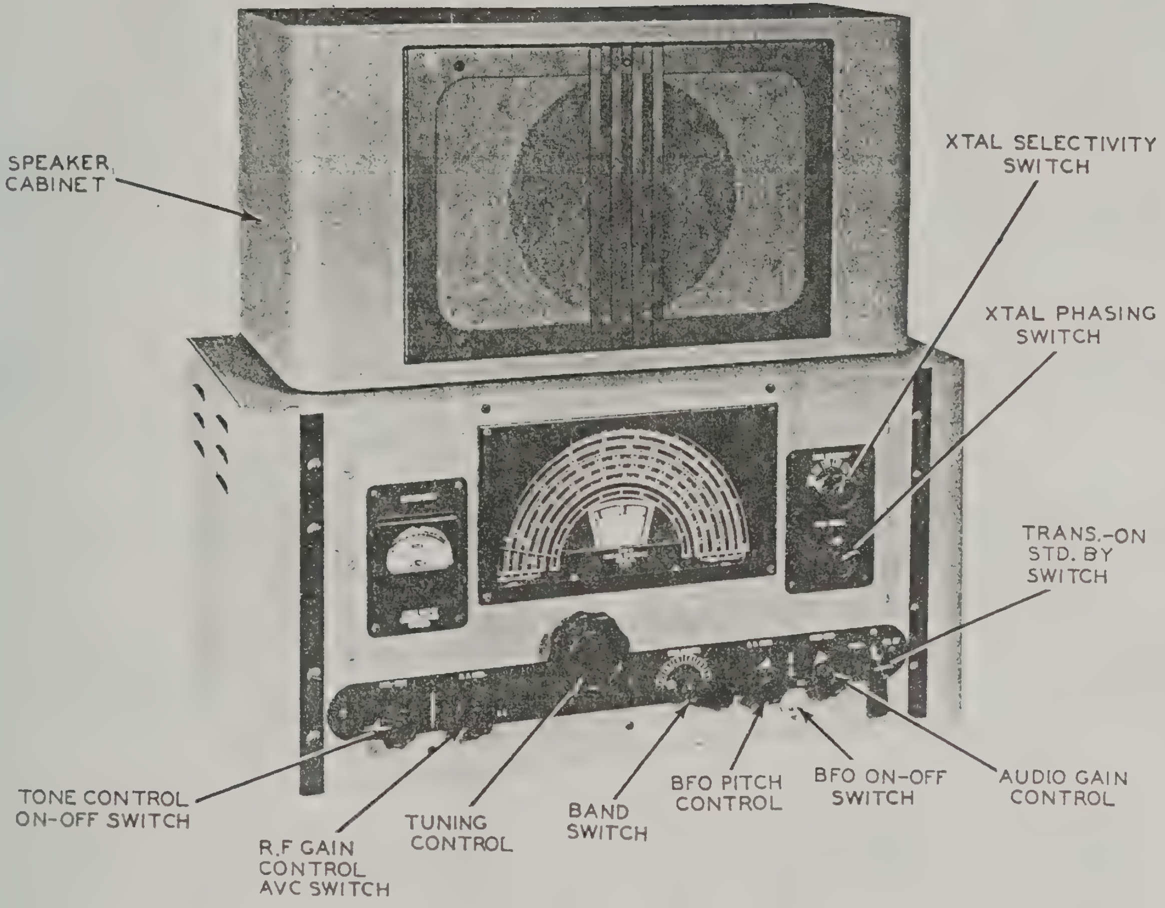
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC VOLTAGE MEASUREMENTS ARE AT 20,000 OHMS PER VOLT; AC VOLTAGES MEASURED AT 1,000 OHMS PER VOLT.
2. SOCKET CONNECTIONS ARE SHOWN AS BOTTOM VIEWS.
3. MEASURED VALUES ARE FROM SOCKET PIN TO COMMON NEGATIVE.
4. LINE VOLTAGE MAINTAINED AT 117 VOLTS FOR VOLTAGE READINGS.
5. NOMINAL TOLERANCE ON COMPONENT VALUES MAKES POSSIBLE A VARIATION OF ± 10% IN VOLTAGE AND RESISTANCE READINGS.
6. VOLUME CONTROL AT MAXIMUM, NO SIGNAL APPLIED FOR VOLTAGE MEASUREMENTS.



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE 473-25

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



R.M.E. MODEL 45

TRADE NAME	RME Model 45
MANUFACTURER	Radio Manufacturing Engineers, Inc., Peoria (6), Ill.
TYPE SET	AC Operated Multiband Communications Superheterodyne Receiver
TUBES (NINE)	Types, 7B7 RF Amp., 7J7 Converter, (2) 7B7 1st & 2nd IF Amp., 7B6 Det.-BFO, 7C7 AF Amp., 7A6 Noise Limiter, 7C5 Power Output, 80 Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	1.53 Amp. @ 117 Volts AC
TUNING RANGES -	BROADCAST - Band 1 - .540-1.6 MC, Band 2 - 1.6-2.9 MC, Band 3 - 2.9-5.4 MC, Band 4 - 5.4-9.8 MC, Band 5 - 9.8-18 MC, Band 6 - 18-33 MC.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		RME PART No.	STANDARD REPLACEMENT		
1	RF Amp.	7B7	7B7	8AR	
2	Converter	7J7	7J7	8AK	
3	1st IF Amp.	7B7	7B7	8V	
4	2nd IF Amp.	7B7	7B7	8V	
5	Det.-Beat Osc.	7B6	7B6	8W	
6	1st AF Amp.	7C7	7C7	8V	
7	Noise Limiter	7A6	7A6	7AJ	
8	Power Output	7C5	7C5	6AA	
9	Rectifier	80	80	4C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RME PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	
10A	15	450		EL-344	AF44J	UP6CJ47	FP390	DY-3x15-450	■ Filter
B	10	450							"
C	15	450			PRS450-10				▲ "
11	20	25		TA-25	PRS25-25	BR252A	TC26	M-25-25	Output Cath. Bypass
12	20	25		TA-25	PRS25-25	BR252A	TC26	M-25-25	1st AF Cath. Bypass
13	1	200		TC-10	484-1	DT4W1	TP422	S-4-1M	AVC Diode Filter
14	1	400		TC-10	484-1	DT4W1	TP422	S-4-1M	RF Bypass Pwr. Supp.
15	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Tone Compensation
16	.1	600		TC-1	684-.1	DT6P1	TP418	S-6-1	Audio Coupling
17	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st AF Screen Bypass
18	.1	600		TC-1	684-.1	DT6P1	TP418	S-6-1	Audio Coupling
19	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter
20	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	BFO Plate Decoupling
21	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	2nd IF Plate Decoup.
22	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	2nd IF Screen Bypass
23	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	2nd IF Cath. Bypass
24	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter
25	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st IF Plate Decoup.
26	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st IF Screen Bypass
27	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st IF Cath. Bypass *
28	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter
29	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Plate Decoup.
30	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Cath. Bypass
31	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Screen Bypass
32	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Plate Decoupling
33	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Screen Bypass
34	.1	600		TC-1	684-.1	DT6P1	TP418	S-6-1	AVC Filter
35	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Osc. Bypass
36	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Cath. Bypass
37	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter *
38	250	500		1FM-325	1468-00025	5W5T25	MC240	M0.5-325	IF Bypass Vol. Cont.
39	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	IF Bypass Diode
40	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	BFO Coupling
41	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	" "
42	50	500		MS-45	1469-00005	5R5Q5	MCB225	MOS.5-45	Fixed Trimmer
43	50	500		MS-45	1469-00005	5R5Q5	MCB225	MOS.5-45	Fixed Trimmer
44	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	Osc. Grid Capacitor
45	550	500							Fixed Padder
46	600	500							" "
47	1300	500							" "
48	1700	500							" "
49	3900	500							" "
127	250	500		1FM-325	1468-00025	5W5T25	MC240	M0.5-325	Tone Compensation *

*Not used in all models.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	RME PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
50A	1 Meg.	1		MR53	D13-137	M-63-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 50A per instructions
C	Switch			M26	41	SW-A	" " " " "
51A	30KΩ	1					RF Gain Control & AVC Switch
B	Shaft						
C	Switch						
52A	250KΩ	1		UM149	D11-130	M-55-S	Audio Gain Control
B	Shaft			Not Req.	A	Not Req.	Attach to 52A per instructions
53	200Ω	1		C200P	W-200	43-200	Meter Adj. Control

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RME PART No.	IRC PART No.	
54	100KΩ	1/3		BTS-100K	Br.-Blk.-Blue AVC Network
55	50KΩ	1		BTA-47K	Grn.-Blk.-Or. Bleeder
56	150Ω	1/3		BW-½-150	Br.-Grn.-Br. RF Cathode
57	2200Ω	1/3		BTS-2200	Red-Red-Red RF Screen Dropping
58	2000Ω	1/3		BTS-2200	Red-Blk.-Red Mixer Screen Dropping
59	2200Ω	1/3		BTS-2200	Red-Red-Red RF Plate Decoupling
60	300Ω	1/3		BW-½-270	Or.-Blk.-Br. Converter Cathode
61	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Oscillator Grid
62	2000Ω	1/3		BTS-2200	Red-Blk.-Red Mixer Plate Decoupling
63	2000Ω	1/3		BTS-2200	Red-Blk.-Red Oscillator Plate Decoupling-See Note
64	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. 1st IF Grid -See Note 2
65	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. AVC Network
66	2200Ω	1/3		BTS-2200	Red-Red-Red 1st IF Screen Dropping
67	2200Ω	1/3		BTS 2200	Red-Red-Red 1st IF Plate Decoupling
68	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. AVC Network
69	300Ω	1/3		BW-½-270	Or.-Blk.-Br. 2nd IF Cathode
70	2200Ω	1/3		BTS-2200	Red-Red-Red 2nd IF Screen Dropping
71	2200Ω	1/3		BTS-2200	Red-Red-Red 2nd IF Plate Decoupling
72	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Diode Load
73	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Diode Load
74	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
75	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. BFO Grid
76	250KΩ	1/3		BTS-270K	Red-Grn.-Yl. BFO Plate Decoupling
77	250KΩ	1/3		BTS-270K	Red-Grn.-Yl. Noise Limiter Network
78	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Tone Compensation
79	1000Ω	1/3		BTS-1000	Br.-Blk.-Red AF Cathode
80	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. AF Screen Dropping
81	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. AF Plate Load
82	250KΩ	1/3		BTS-270K	Red-Grn.-Yl. Output Grid
83	240Ω	1		BW-1-220	Red-Yl.-Br. Output Cathode
84	35Ω	1/3		BW-½-33	Or.-Grn.-Blk. Headphone Shunt
85	20KΩ	1/3		BTS-22K	Red-Blk.-Or. Decoupling
86A	5500Ω	10		ABA-10,000	Voltage Dropping-See Note 3
B	4500Ω				Bleeder
87	18Ω	1/3		BW-½-18	Br.-Gray-Blk. Parasitic Suppressor-See Note 1
88	250KΩ	1/3		BTS-270K	Red-Grn.-Yl. Crystal Filter Network
89	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. Crystal Filter Network
90	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Crystal Filter Network
91	20KΩ	1/3		BTS-22K	Red-Blk.-Or. Crystal Filter Network
92	1500Ω	1/3		BTS-1500	Br.-Grn.-Red Series "S" Meter
93	18Ω	1/3		BW-½-18	Br.-Gray-Blk. Series Meter Pilot Light-See Note 1

Note 1 - Not used in all models.
Note 2 - Not used in models having crystal filter unit.
Note 3 - On IRC replacement set slider 4500Ω from one end.

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA			INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000~)	RME PART NO.	STANCOR PART NO.	THORDARSON PART NO.	
94	.116A	220Ω	12 Henries		C-1710	T20C54 ‡	‡ Drill one new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	RME PART No.	STANCOR PART No.	THORDAR'N PART No.	
95	117V AC @ 1.53A	670V CT @ .116A	5.3V AC @ 1.8A	6.5V AC @ 2.2A		P-6013	T22R06	

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.						
	PRI.	SEC.	PRI.	SEC.	RME PART No.	STANCOR PART No.	THORDAR'N PART No.		
96	3400Ω	4Ω	170Ω	.4Ω		A-3825 ‡	T22S60 ‡		‡ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			RME PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
97	PM	4Ω		ST-117 Mod. P8-T		
	CONE DIA.	VC DIA.				
98	7-3/4"	7/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	RME PART No.	MEISSNER PART No.	
	Band					
99	Ant. Coil #1	1.5Ω	3.2Ω			
100	" " #2	.5Ω	1.5Ω			
101A	" " #3	0Ω	.2Ω			Items 101A and 101B wound on same form.
B	" " #4	0Ω	0Ω			
102A	" " #5	0Ω	0Ω			Items 102A and 102B wound on same form.
B	" " #6	0Ω	0Ω			
103	RF Coil #1	1.5Ω	3.5Ω			
104	" " #2	.5Ω	1.5Ω			
105A	" " #3	.2Ω	.2Ω			Items 105A and 105B wound on same form.
B	" " #4	0Ω	0Ω			
106A	" " #5	0Ω	0Ω			Items 106A and 106B wound on same form.
B	" " #6	0Ω	0Ω			
107	Osc. Coil #1	.5Ω	2.3Ω			
108	" " #2	.5Ω	1.5Ω			
109A	" " #3	0Ω	.2Ω			Items 109A and 109B wound on same form.
B	" " #4	0Ω	.1Ω			
110A	" " #5	0Ω	0Ω			Items 110A and 110B wound on same form.
B	" " #6	0Ω	0Ω			
111	BFO	1Ω	3Ω			
112	XTAL Filter Coil		6Ω			
113	Input IF	3Ω	4.5Ω			
114	Inter. IF	7.8Ω	3Ω			
115	Output IF	3Ω	7.8Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					RME PART No.		
116	Screw	6-8	0.25	Blue			Type 46
117	Bayonet	6-8	0.15	Brown			Type 47
118	Bayonet	6-8	0.15	Brown			Type 47
119	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	RME PART No.	NOTES
120	Switch		Stand-by, 3 Position, 2 Pole
121	Bandswitch		
122	Switch		XTAL Selectivity, 5 Pos., 1 Pole
123	Var. Capacitor		XTAL Phasing
124	Var. Capacitor		BFO
125	4 Gang Var. Cap		
126	Crystal		
128	Switch		BFO, SPST

DISASSEMBLY INSTRUCTIONS

FOR ALIGNMENT ONLY

1. For alignment remove six Phillips head screws from bottom of cabinet and remove bottom plate.

COMPLETE DISASSEMBLY

2. Remove two self-tapping screws from bottom of cabinet.
3. Remove eight machine screws and panel strips from front of cabinet and two Phillips head screws.
4. Slide chassis from cabinet.
5. Remove five hex nuts from bottom of chassis.
6. Remove bottom chassis cover.
7. Remove two nuts and two self-tapping screws from coil shield on top of chassis, remove shield.

REMOVAL OF CRYSTAL COMPARTMENT

8. Remove XTAL knobs from front of chassis. Remove four Phillips head screws from XTAL name plate and remove plate.
9. Remove two self-tapping screws from XTAL compartment on top of chassis. Unplug XTAL compartment from socket on chassis.
10. Remove eight self-tapping screws from shield on XTAL compartment.

<table>
<tr><th colspan="8">ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT</th></tr>
<tr><td colspan="8">Use "R" meter on receiver for output indication when aligning B.O. switch, crystal selectivity switch should be off, trans.-std. by-on switch should be on, and RF gain fully clockwise. Output of signal generator no higher than necessary to obtain output reading. Audio gain should be sufficiently clockwise to enable monitoring of signal. Use insulated alignment screwdriver for adjusting.</td></tr>
<tr><th>DUMMY ANTENNA</th><th>SIGNAL GENERATOR COUPLING</th><th>SIGNAL GENERATOR FREQUENCY</th><th>BAND SWITCH POS.</th><th>RADIO DIAL SETTING</th><th>OUTPUT METER</th><th>ADJUST</th><th>REMARKS</th></tr>
<tr><td>.1 MFD.</td><td>High side to stator of center section of variable. Low side to chassis.</td><td>455KC</td><td>1</td><td>Variable fully closed</td><td>See pre-alignment instructions.</td><td>A1,A2, A3,A4, A5.</td><td>Adjust for maximum reading.</td></tr>
<tr><td colspan="8">Turn crystal selectivity switch to position 5. Tune signal generator for peak on "R" meter. This will be approximately 455KC. The signal generator is now accurately tuned to the crystal frequency. Turn the crystal selectivity switch to "off" and repeat last step making certain that the setting of the signal generator remains unchanged.</td></tr>
<tr><td>.1 MFD.</td><td>High side to stator of center section of variable. Low side to chassis.</td><td>455KC</td><td>1</td><td>Variable fully closed</td><td>See pre-alignment instructions.</td><td>A6</td><td>Turn B.O. switch on and set pitch control vertical. Adjust A6 for zero beat.</td></tr>
<tr><td>200Ω</td><td>High side to ant terminal. Low side to chassis.</td><td>600KC</td><td>"</td><td>600KC</td><td>"</td><td>A7</td><td>Adjust for maximum reading.</td></tr>
<tr><td>200Ω</td><td>"</td><td>1400KC</td><td>"</td><td>1400KC</td><td>"</td><td>A8</td><td>Adjust for maximum reading. Repeat last two steps until no further improvement can be made.</td></tr>
<tr><td>200Ω</td><td>"</td><td>"</td><td>"</td><td>"</td><td>"</td><td>A9, A10</td><td>Adjust for maximum reading.</td></tr>
<tr><td>200Ω</td><td>"</td><td>600KC</td><td>"</td><td>600KC</td><td>"</td><td>A11, A12</td><td>Adjust for maximum reading. Repeat last two steps until no further improvement can be made.</td></tr>
<tr><td>200Ω</td><td>"</td><td>1800KC</td><td>2</td><td>1800KC</td><td>"</td><td>A13</td><td>Adjust for maximum reading.</td></tr>
<tr><td>200Ω</td><td>"</td><td>2800KC</td><td>"</td><td>2800KC</td><td>"</td><td>A14</td><td>Adjust for maximum reading. Repeat last two steps until no further improvement can be made.</td></tr>
<tr><td>200Ω</td><td>"</td><td>"</td><td>"</td><td>"</td><td>"</td><td>A15,A16</td><td>Adjust for maximum reading.</td></tr>
<tr><td>200Ω</td><td>"</td><td>1800KC</td><td>"</td><td>1800KC</td><td>"</td><td>A17,A18</td><td>Adjust for maximum reading. Repeat last two steps until no further improvement can be made.</td></tr>
<tr><td>200Ω</td><td>"</td><td>5MC</td><td>3</td><td>5MC</td><td>"</td><td>A19</td><td>Adjust for maximum reading.</td></tr>
<tr><td>200Ω</td><td>"</td><td>5MC</td><td>"</td><td>5MC</td><td>"</td><td>A20,A21</td><td>"</td></tr>
<tr><td>200Ω</td><td>"</td><td>9MC</td><td>4</td><td>9MC</td><td>"</td><td>A22</td><td>"</td></tr>
<tr><td>200Ω</td><td>"</td><td>"</td><td>"</td><td>"</td><td>"</td><td>A23,A24</td><td>"</td></tr>
<tr><td>200Ω</td><td>"</td><td>16MC</td><td>5</td><td>16MC</td><td>"</td><td>A25</td><td>"</td></tr>
<tr><td>200Ω</td><td>"</td><td>"</td><td>"</td><td>"</td><td>"</td><td>A26,A27</td><td>"</td></tr>
<tr><td>200Ω</td><td>"</td><td>30MC</td><td>6</td><td>30MC</td><td>"</td><td>A28</td><td>"</td></tr>
<tr><td>200Ω</td><td>"</td><td>"</td><td>"</td><td>"</td><td>"</td><td>A29,A30</td><td></td></tr>
<tr><td colspan="8">Tune in a broadcast station playing music. Turn crystal selectivity switch to position 5 and tune in station accurately. Adjust crystal phasing control for minimum background noise. Turn selectivity control to position "1". Adjust A31 for most natural reproduction of music.</td></tr>
</table>

ANTENNA

The terminals on the rear apron marked "A-A-G" are for the antenna connection. When the receiver leaves the factory there is a jumper between one of the "A" posts and the "G" post. Good results may be obtained by connecting a wire 50 to 75 feet long to the other "A" post. If a 2 wire feeder system is used the jumper is removed and the two feeders are connected to "A" and "A". A ground may be connected to the "G" post if it improves reception.

RELAY AND BREAK-IN TERMINALS

On the rear apron are two sets of contacts marked "R" and "B". The pair marked "B" are in series with the plate supply. This pair must always be shorted when the receiver is being used, either by a relay or by a jumper if a remote control feature is not used. This jumper is in place when the set leaves the factory.

The pair marked "R" are relay control terminals. This pair is shorted when the receiver stand-by switch is turned to "Trans". It may be used to control an external relay in conjunction with a suitable external voltage.

CONTROLS SET AS FOLLOWS:
LINE-TONE CONTROL MAXIMUM CLOCKWISE
RF GAIN ON AVC
BAND SELECTOR AT #1
BFO OFF EXCEPT FOR 7B6 READINGS
AUDIO GAIN AT MAXIMUM

VOLTAGE READINGS

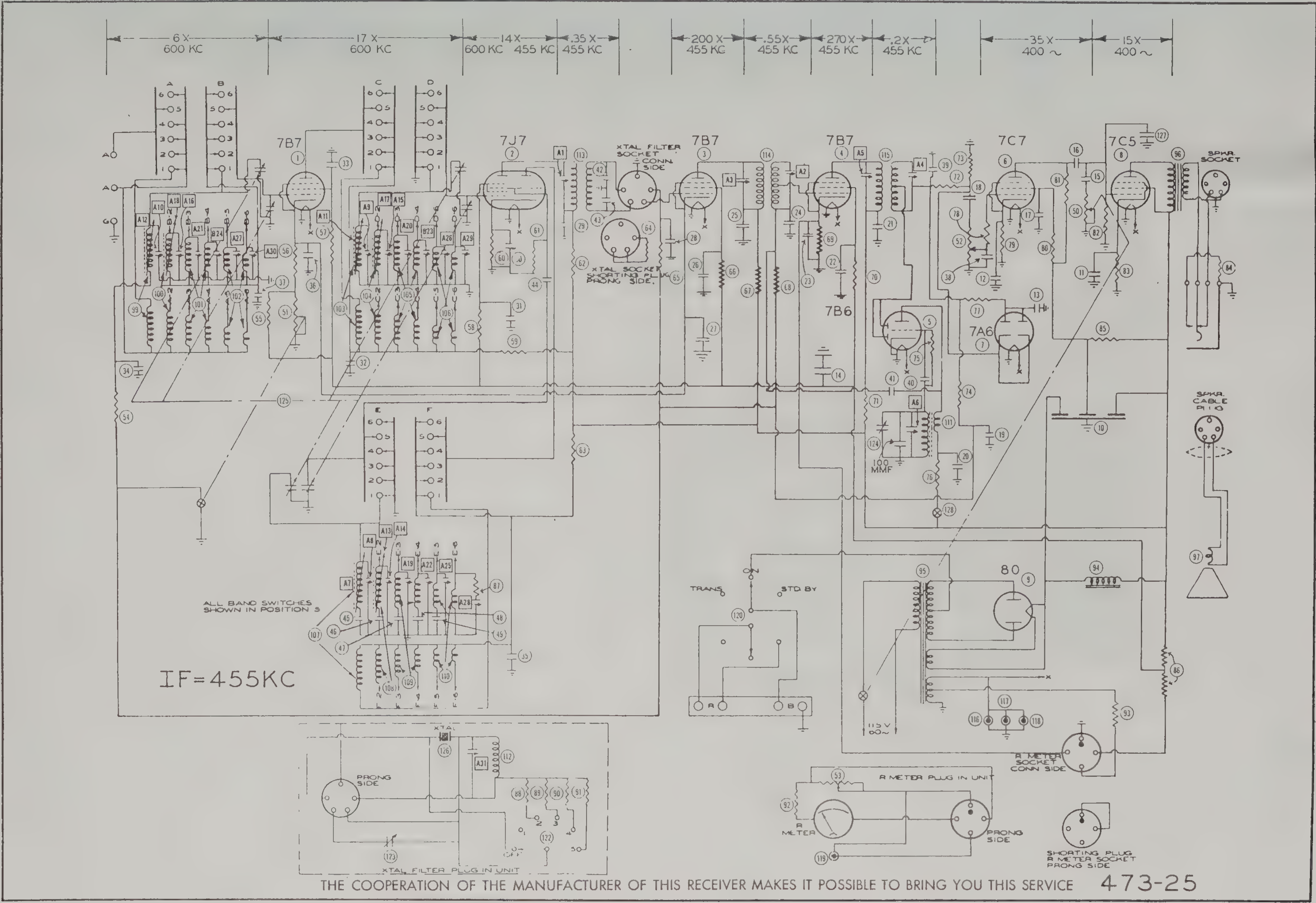
ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	7B7	0V.	290 V.DC	115 V.DC	3 V. DC	0V.	-.1 V.DC	3 V.DC	6.5 V.AC
2	7J7	0V.	308 V.DC	195 V.DC	-3 V.DC	115 V.DC	0V.	3.1 V.DC	6.5 V.AC
3	7B7	0V.	290 V.DC	115 V.DC	3 V.DC	0V.	-.1 V.DC	3 V.DC	6.5 V.AC
4	7B7	0V.	295 V.DC	115 V.DC	2.5 V.DC	0V.	-.1 V.DC	2.5 V.DC	6.5 V.AC
5	7B6	0V.	140 V.DC	-4.5 V.DC	0V.	-.5 V.DC	-5 V.DC	0V.	6.5 V.AC
6	7C7	0V.	180 V.DC	60 V.DC	1.5 V.DC	0V.	0V.	1.5 V.DC	6.5 V.AC
7	7A8	0V.	-.2 V.DC	-55 V.DC	0V.	0V.	-55 V.DC	-2 V.DC	6.5 V.AC
8	7C5	0V.	300 V.DC	308 V.DC	0V.	0V.	0V.	15 V.DC	6.5 V.AC
9	80	338 V.DC	335 V.AC	335 V.AC	338 V.DC				

RESISTANCE READINGS

ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	7B7	0 Ω	11.5 KΩ	6.4 KΩ	140 Ω	0 Ω	1 MEG.	140 Ω	.2 Ω
2	7J7	0 Ω	11.5 KΩ	27 KΩ	51 KΩ	5.5 KΩ	2.8 Ω	250 Ω	.2 Ω
3	7B7	0 Ω	11.5 KΩ	6.4 KΩ	140 Ω	0 Ω	1 MEG.	140 Ω	.2 Ω
4	7B7	0 Ω	11.5 KΩ	6.4 KΩ	210 Ω	0 Ω	1 MEG.	210 Ω	.2 Ω
5	7B6	0 Ω	225 KΩ	90 KΩ	0 Ω	103 KΩ	103 KΩ	0 Ω	.2 Ω
6	7C7	0 Ω	103 KΩ	850 KΩ	900 Ω	0 Ω	280 KΩ	900 Ω	.2 Ω
7	7A8	0 Ω	53 KΩ	350 KΩ	INF.	0 Ω	350 KΩ	53 KΩ	.2 Ω
8	7C5	0 Ω	9.5 KΩ	9.1 KΩ	INF.	0 Ω	240 KΩ	225 Ω	.2 Ω
9	80	9.5 KΩ	103 Ω	95 Ω	9.5 KΩ				

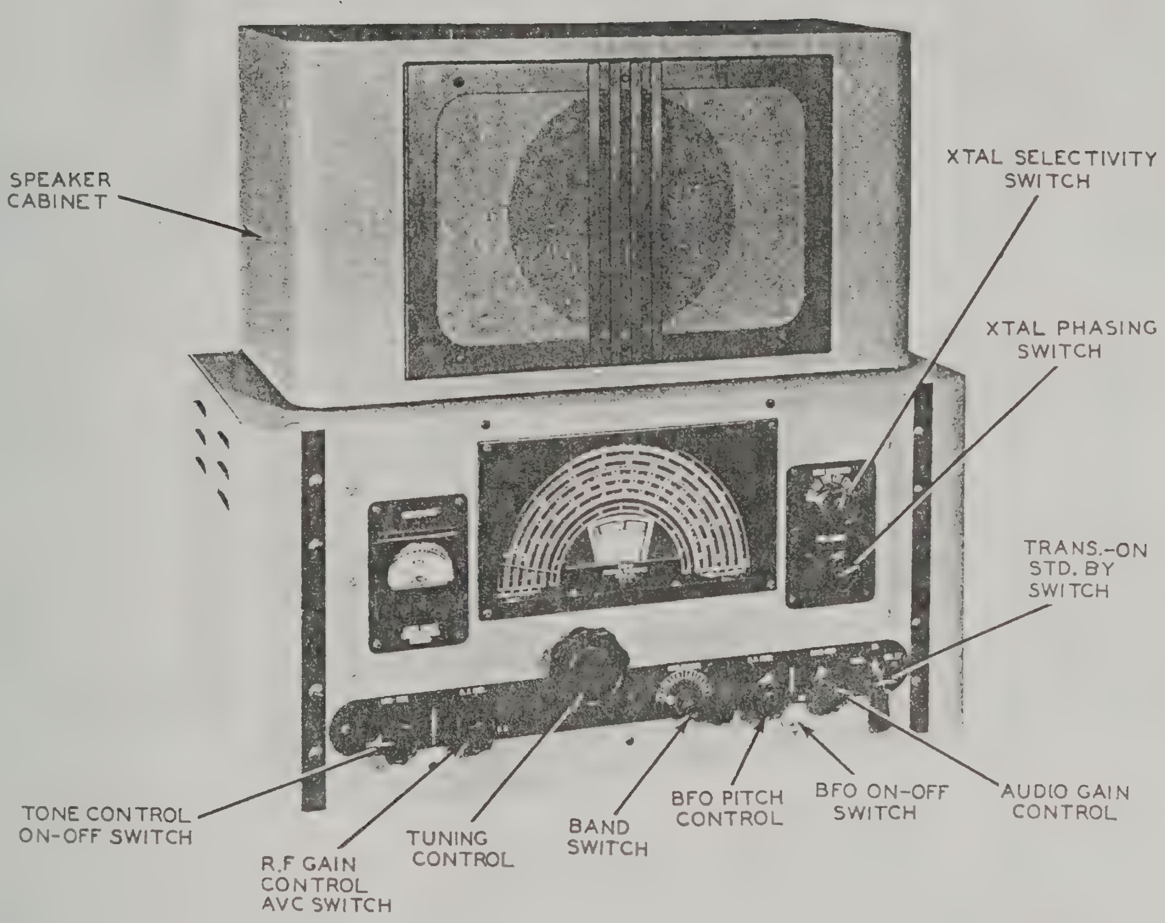
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC VOLTAGE MEASUREMENTS ARE AT 20,000 OHMS PER VOLT; AC VOLTAGES MEASURED AT 1,000 OHMS PER VOLT.
2. SOCKET CONNECTIONS ARE SHOWN AS BOTTOM VIEWS.
3. MEASURED VALUES ARE FROM SOCKET PIN TO COMMON NEGATIVE.
4. LINE VOLTAGE MAINTAINED AT 117 VOLTS FOR VOLTAGE READINGS.
5. NOMINAL TOLERANCE ON COMPONENT VALUES MAKES POSSIBLE A VARIATION OF ± 10% IN VOLTAGE AND RESISTANCE READINGS.
6. VOLUME CONTROL AT MAXIMUM, NO SIGNAL APPLIED FOR VOLTAGE MEASUREMENTS.



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE 473-25

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



R.M.E. MODEL 45

TRADE NAME	RME Model 45
MANUFACTURER	Radio Manufacturing Engineers, Inc., Peoria (6), Ill.
TYPE SET	AC Operated Multiband Communications Superheterodyne Receiver
TUBES (NINE)	Types, 7B7 RF Amp., 7J7 Converter, (2) 7B7 1st & 2nd IF Amp., 7B6 Det.-BFO, 7C7 AF Amp., 7A6 Noise Limiter, 7C5 Power Output, 80 Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	1.53 Amp. @ 117 Volts AC
TUNING RANGES -	BROADCAST - Band 1 - .540-1.6 MC, Band 2 - 1.6-2.9 MC, Band 3 - 2.9-5.4 MC, Band 4 - 5.4-9.8 MC, Band 5 - 9.8-18 MC, Band 6 - 18-33 MC.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		RME PART No.	STANDARD REPLACEMENT		
1	RF Amp.	7B7	7B7	8AR	
2	Converter	7J7	7J7	8AK	
3	1st IF Amp.	7B7	7B7	8V	
4	2nd IF Amp.	7B7	7B7	8V	
5	Det.-Beat Osc.	7B6	7B6	8W	
6	1st AF Amp.	7C7	7C7	8V	
7	Noise Limiter	7A6	7A6	7AJ	
8	Power Output	7C5	7C5	6AA	
9	Rectifier	80	80	4C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RME PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	
10A	15	450		EL-344	AF44J	UP6CJ47	FP390	DY-3x15-450	■ Filter
B	10	450							"
C	15	450			PRS450-10				▲ "
11	20	25		TA-25	PRS25-25	BR252A	TC26	M-25-25	Output Cath. Bypass
12	20	25		TA-25	PRS25-25	BR252A	TC26	M-25-25	1st AF Cath. Bypass
13	1	200		TC-10	484-1	DT4W1	TP422	S-4-1M	AVC Diode Filter
14	1	400		TC-10	484-1	DT4W1	TP422	S-4-1M	RF Bypass Pwr. Supp.
15	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Tone Compensation
16	.1	600		TC-1	684-.1	DT6P1	TP418	S-6-1	Audio Coupling
17	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st AF Screen Bypass
18	.1	600		TC-1	684-.1	DT6P1	TP418	S-6-1	Audio Coupling
19	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter
20	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	BFO Plate Decoupling
21	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	2nd IF Plate Decoup.
22	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	2nd IF Screen Bypass
23	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	2nd IF Cath. Bypass
24	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter
25	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st IF Plate Decoup.
26	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st IF Screen Bypass
27	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st IF Cath. Bypass *
28	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter
29	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Plate Decoup.
30	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Cath. Bypass
31	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Screen Bypass
32	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Plate Decoupling
33	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Screen Bypass
34	.1	600		TC-1	684-.1	DT6P1	TP418	S-6-1	AVC Filter
35	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Osc. Bypass
36	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Cath. Bypass
37	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter *
38	250	500		1FM-325	1468-00025	5W5T25	MC240	M0.5-325	IF Bypass Vol. Cont.
39	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	IF Bypass Diode
40	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	BFO Coupling
41	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	" "
42	50	500		MS-45	1469-00005	5R5Q5	MCB225	MOS.5-45	Fixed Trimmer
43	50	500		MS-45	1469-00005	5R5Q5	MCB225	MOS.5-45	Fixed Trimmer
44	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	Osc. Grid Capacitor
45	550	500							Fixed Padder
46	600	500							" "
47	1300	500							" "
48	1700	500							" "
49	3900	500							" "
127	250	500		1FM-325	1468-00025	5W5T25	MC240	M0.5-325	Tone Compensation *

*Not used in all models.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESIST-ANCE	WATTS	RME PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
50A	1 Meg.	1		MR53	D13-137	M-63-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 50A per instructions
C	Switch			M26	41	SW-A	" " " " "
51A	30KΩ	1					RF Gain Control & AVC Switch
B	Shaft						
C	Switch						
52A	250KΩ	1		UM149	D11-130	M-55-S	Audio Gain Control
B	Shaft			Not Req.	A	Not Req.	Attach to 52A per instructions
53	200Ω	1		C200P	W-200	43-200	Meter Adj. Control

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RME PART No.	IRC PART No.	
54	100KΩ	1/3		BTS-100K	Br.-Blk.-Blue AVC Network
55	50KΩ	1		BTA-47K	Grn.-Blk.-Or. Bleeder
56	150Ω	1/3		BW-½-150	Br.-Grn.-Br. RF Cathode
57	2200Ω	1/3		BTS-2200	Red-Red-Red RF Screen Dropping
58	2000Ω	1/3		BTS-2200	Red-Blk.-Red Mixer Screen Dropping
59	2200Ω	1/3		BTS-2200	Red-Red-Red RF Plate Decoupling
60	300Ω	1/3		BW-½-270	Or.-Blk.-Br. Converter Cathode
61	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Oscillator Grid
62	2000Ω	1/3		BTS-2200	Red-Blk.-Red Mixer Plate Decoupling
63	2000Ω	1/3		BTS-2200	Red-Blk.-Red Oscillator Plate Decoupling-See Note
64	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. 1st IF Grid -See Note 2
65	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. AVC Network
66	2200Ω	1/3		BTS-2200	Red-Red-Red 1st IF Screen Dropping
67	2200Ω	1/3		BTS 2200	Red-Red-Red 1st IF Plate Decoupling
68	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. AVC Network
69	300Ω	1/3		BW-½-270	Or.-Blk.-Br. 2nd IF Cathode
70	2200Ω	1/3		BTS-2200	Red-Red-Red 2nd IF Screen Dropping
71	2200Ω	1/3		BTS-2200	Red-Red-Red 2nd IF Plate Decoupling
72	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Diode Load
73	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Diode Load
74	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
75	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. BFO Grid
76	250KΩ	1/3		BTS-270K	Red-Grn.-Yl. BFO Plate Decoupling
77	250KΩ	1/3		BTS-270K	Red-Grn.-Yl. Noise Limiter Network
78	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Tone Compensation
79	1000Ω	1/3		BTS-1000	Br.-Blk.-Red AF Cathode
80	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. AF Screen Dropping
81	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. AF Plate Load
82	250KΩ	1/3		BTS-270K	Red-Grn.-Yl. Output Grid
83	240Ω	1		BW-1-220	Red-Yl.-Br. Output Cathode
84	35Ω	1/3		BW-½-33	Or.-Grn.-Blk. Headphone Shunt
85	20KΩ	1/3		BTS-22K	Red-Blk.-Or. Decoupling
86A	5500Ω	10		ABA-10,000	Voltage Dropping-See Note 3
B	4500Ω				Bleeder
87	18Ω	1/3		BW-½-18	Br.-Gray-Blk. Parasitic Suppressor-See Note 1
88	250KΩ	1/3		BTS-270K	Red-Grn.-Yl. Crystal Filter Network
89	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. Crystal Filter Network
90	50KΩ	1/3		BTS-47K	Grn.-Blk.-Or. Crystal Filter Network
91	20KΩ	1/3		BTS-22K	Red-Blk.-Or. Crystal Filter Network
92	1500Ω	1/3		BTS-1500	Br.-Grn.-Red Series "S" Meter
93	18Ω	1/3		BW-½-18	Br.-Gray-Blk. Series Meter Pilot Light-See Note 1

Note 1 - Not used in all models.
Note 2 - Not used in models having crystal filter unit.
Note 3 - On IRC replacement set slider 4500Ω from one end.

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA			INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000∿)	RME PART NO.	STANCOR PART NO.	THORDARSON PART NO.	
94	.116A	220Ω	12 Henries		C-1710	T20C54 ‡	‡ Drill one new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RME PART No.	STANCOR PART No.	THORDAR'N PART No.	INSTALLATION NOTES
95	117V AC @ 1.53A	670V CT @ .116A	5.3V AC @ 1.8A	6.5V AC @ 2.2A		P-6013	T22R06	

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RME PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
96	3400Ω	4Ω	170Ω	.4Ω		A-3825 ‡	T22S60 ‡		‡ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			RME PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
97	PM	4Ω		ST-117 Mod. P8-T		
	CONE DIA.	VC DIA.				
98	7-3/4"	7/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	RME PART No.	MEISSNER PART No.	
	Band					
99	Ant. Coil #1	1.5Ω	3.2Ω			
100	" " #2	.5Ω	1.5Ω			
101A	" " #3	0Ω	.2Ω			Items 101A and 101B wound on same form.
B	" " #4	0Ω	0Ω			
102A	" " #5	0Ω	0Ω			Items 102A and 102B wound on same form.
B	" " #6	0Ω	0Ω			
103	RF Coil #1	1.5Ω	3.5Ω			
104	" " #2	.5Ω	1.5Ω			
105A	" " #3	.2Ω	.2Ω			Items 105A and 105B wound on same form.
B	" " #4	0Ω	0Ω			
106A	" " #5	0Ω	0Ω			Items 106A and 106B wound on same form.
B	" " #6	0Ω	0Ω			
107	Osc. Coil #1	.5Ω	2.3Ω			
108	" " #2	.5Ω	1.5Ω			
109A	" " #3	0Ω	.2Ω			Items 109A and 109B wound on same form.
B	" " #4	0Ω	.1Ω			
110A	" " #5	0Ω	0Ω			Items 110A and 110B wound on same form.
B	" " #6	0Ω	0Ω			
111	BFO	1Ω	3Ω			
112	XTAL Filter Coil		6Ω			
113	Input IF	3Ω	4.5Ω			
114	Inter. IF	7.8Ω	3Ω			
115	Output IF	3Ω	7.8Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					RME PART No.		
116	Screw	6-8	0.25	Blue			Type 46
117	Bayonet	6-8	0.15	Brown			Type 47
118	Bayonet	6-8	0.15	Brown			Type 47
119	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	RME PART No.	NOTES
120	Switch		Stand-by, 3 Position, 2 Pole
121	Bandswitch		
122	Switch		XTAL Selectivity, 5 Pos., 1 Pole
123	Var. Capacitor		XTAL Phasing
124	Var. Capacitor		BFO
125	4 Gang Var. Cap		
126	Crystal		
128	Switch		BFO, SPST

DISASSEMBLY INSTRUCTIONS

FOR ALIGNMENT ONLY

1. For alignment remove six Phillips head screws from bottom of cabinet and remove bottom plate.

COMPLETE DISASSEMBLY

2. Remove two self-tapping screws from bottom of cabinet.
3. Remove eight machine screws and panel strips from front of cabinet and two Phillips head screws.
4. Slide chassis from cabinet.
5. Remove five hex nuts from bottom of chassis.
6. Remove bottom chassis cover.
7. Remove two nuts and two self-tapping screws from coil shield on top of chassis, remove shield.

REMOVAL OF CRYSTAL COMPARTMENT

8. Remove XTAL knobs from front of chassis. Remove four Phillips head screws from XTAL name plate and remove plate.
9. Remove two self-tapping screws from XTAL compartment on top of chassis. Unplug XTAL compartment from socket on chassis.
10. Remove eight self-tapping screws from shield on XTAL compartment.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use "R" meter on receiver for output indication when aligning. B.O. switch, crystal selectivity switch should be off, trans.-std. by-on switch should be on, and RF gain fully clockwise. Output of signal generator no higher than necessary to obtain output reading. Audio gain should be sufficiently clockwise to enable monitoring of signal. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of center section of variable. Low side to chassis.	455KC	1	Variable fully closed	See pre-alignment instructions.	A1,A2, A3,A4, A5.	Adjust for maximum reading.
Turn crystal selectivity switch to position 5. Tune signal generator for peak on "R" meter. This will be approximately 455KC. The signal generator is now accurately tuned to the crystal frequency. Turn the crystal selectivity switch to "off" and repeat last step making certain that the setting of the signal generator remains unchanged.							
.1 MFD.	High side to stator of center section of variable. Low side to chassis.	455KC	1	Variable fully closed	See pre-alignment instructions.	A6	Turn B.O. switch on and set pitch control vertical. Adjust A6 for zero beat.
200Ω	High side to ant terminal. Low side to chassis.	600KC	"	600KC	"	A7	Adjust for maximum reading.
200Ω	"	1400KC	"	1400KC	"	A8	Adjust for maximum reading. Repeat last two steps until no further improvement can be made.
200Ω	"	"	"	"	"	A9, A10	Adjust for maximum reading.
200Ω	"	600KC	"	600KC	"	A11, A12	Adjust for maximum reading. Repeat last two steps until no further improvement can be made.
200Ω	"	1800KC	2	1800KC	"	A13	Adjust for maximum reading.
200Ω	"	2800KC	"	2800KC	"	A14	Adjust for maximum reading. Repeat last two steps until no further improvement can be made.
200Ω	"	"	"	"	"	A15,A16	Adjust for maximum reading.
200Ω	"	1800KC	"	1800KC	"	A17,A18	Adjust for maximum reading. Repeat last two steps until no further improvement can be made.
200Ω	"	5MC	3	5MC	"	A19	Adjust for maximum reading.
200Ω	"	5MC	"	5MC	"	A20,A21	"
200Ω	"	9MC	4	9MC	"	A22	"
200Ω	"	"	"	"	"	A23,A24	"
200Ω	"	16MC	5	16MC	"	A25	"
200Ω	"	"	"	"	"	A26,A27	"
200Ω	"	30MC	6	30MC	"	A28	"
200Ω	"	"	"	"	"	A29,A30	
Tune in a broadcast station playing music. Turn crystal selectivity switch to position 5 and tune in station accurately. Adjust crystal phasing control for minimum background noise. Turn selectivity control to position "1". Adjust A31 for most natural reproduction of music.							

ANTENNA

The terminals on the rear apron marked "A-A-G" are for the antenna connection. When the receiver leaves the factory there is a jumper between one of the "A" posts and the "G" post. Good results may be obtained by connecting a wire 50 to 75 feet long to the other "A" post. If a 2 wire feeder system is used the jumper is removed and the two feeders are connected to "A" and "A". A ground may be connected to the "G" post if it improves reception.

RELAY AND BREAK-IN TERMINALS

On the rear apron are two sets of contacts marked "R" and "B". The pair marked "B" are in series with the plate supply. This pair must always be shorted when the receiver is being used, either by a relay or by a jumper if a remote control feature is not used. This jumper is in place when the set leaves the factory.

The pair marked "R" are relay control terminals. This pair is shorted when the receiver stand-by switch is turned to "Trans". It may be used to control an external relay in conjunction with a suitable external voltage.

CONTROLS SET AS FOLLOWS:
LINE-TONE CONTROL MAXIMUM CLOCKWISE
RF GAIN ON AVC
BAND SELECTOR AT #1
BFO OFF EXCEPT FOR 7B6 READINGS
AUDIO GAIN AT MAXIMUM

VOLTAGE READINGS

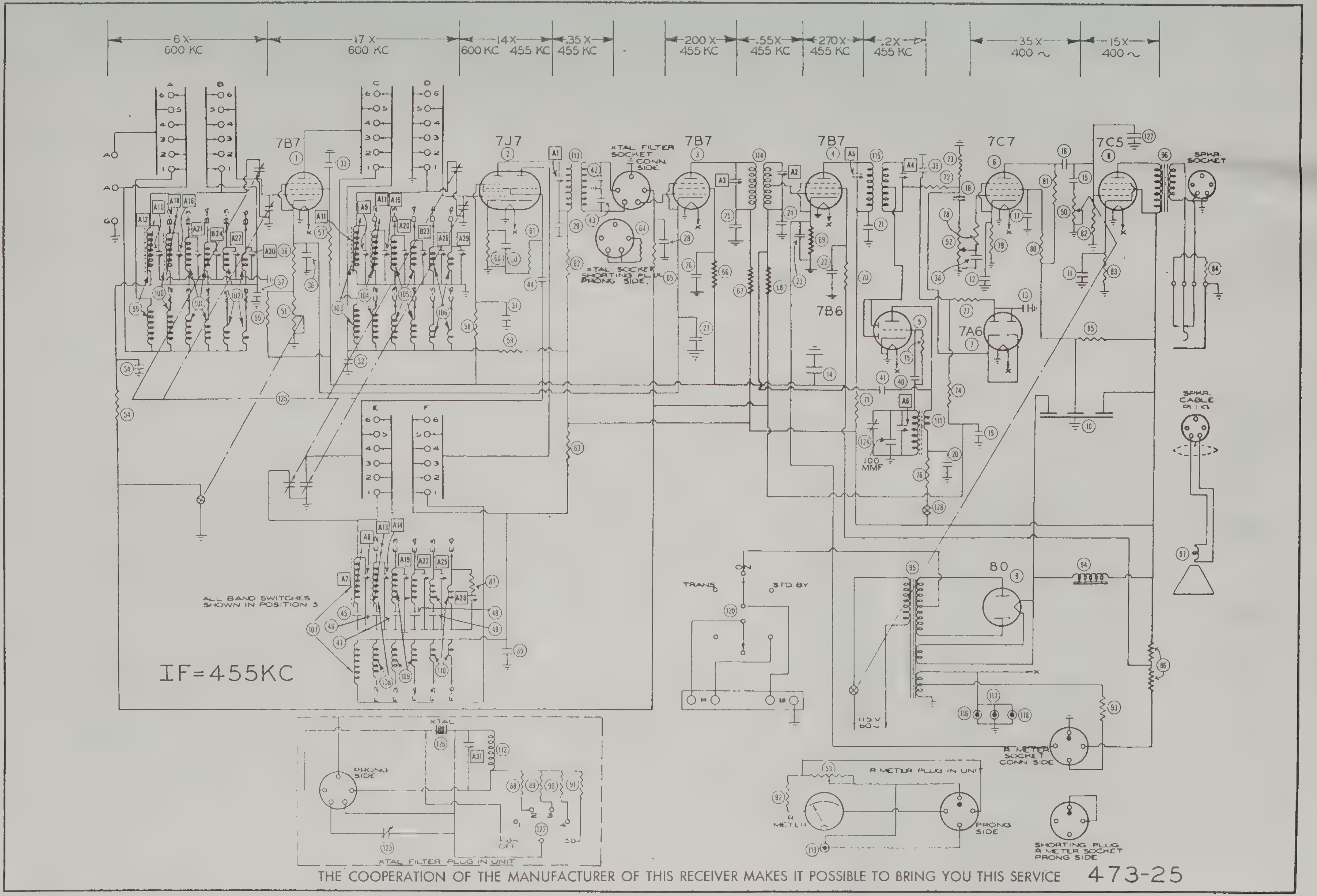
ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	7B7	0V.	290 V.DC	115 V.DC	3 V. DC	0V.	-.1 V.DC	3 V.DC	6.5 V.AC
2	7J7	0V.	308V.DC	195 V.DC	-3V.DC	115 V.DC	0V.	3.1 V.DC	6.5 V.AC
3	7B7	0V.	290 V.DC	115V.DC	3 V.DC	0V.	-.1 V.DC	3 V.DC	6.5 V.AC
4	7B7	0V.	295 V.DC	115 V.DC	2.5V.DC	0V.	-.1 V.DC	2.5 V.DC	6.5V.AC
5	7B6	0V.	140 V.DC	-4.5 V.DC	0V.	-.5 V.DC	-.5 V.DC	0V.	6.5V.AC
6	7C7	0V.	180 V.DC	60 V.DC	1.5 V.DC	0V.	0V.	1.5 V.DC	6.5V.AC
7	7A8	0V.	-.2 V.DC	-.55 V.DC	0V.	0V.	-.55 V.DC	-.2 V.DC	6.5V.AC
8	7C5	0V.	300 V.DC	308 V.DC	0V.	0V.	0V.	15 V.DC	6.5V.AC
9	80	338V.DC	335V.AC	335V.AC	338 V.DC				

RESISTANCE READINGS

ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	7B7	0 Ω	11.5 KΩ	6.4KΩ	140 Ω	0 Ω	1 MEG.	140 Ω	.2 Ω
2	7J7	0 Ω	11.5 KΩ	27KΩ	51 KΩ	5.5 KΩ	2.8 Ω	250 Ω	.2 Ω
3	7B7	0 Ω	11.5 KΩ	6.4 KΩ	140 Ω	0 Ω	1 MEG.	140 Ω	.2 Ω
4	7B7	0 Ω	11.5 KΩ	6.4 KΩ	210 Ω	0 Ω	1 MEG.	210 Ω	.2 Ω
5	7B6	0 Ω	225 KΩ	90 KΩ	0 Ω	103 KΩ	103 KΩ	0 Ω	.2 Ω
6	7C7	0 Ω	103 KΩ	850 KΩ	900 Ω	0 Ω	280 KΩ	900 Ω	.2 Ω
7	7A8	0 Ω	53 KΩ	350 KΩ	INF.	0 Ω	350 KΩ	53 KΩ	.2 Ω
8	7C5	0 Ω	9.5 KΩ	9.1 KΩ	INF.	0 Ω	240 KΩ	225 Ω	.2 Ω
9	80	9.5 KΩ	103 Ω	95 Ω	9.5 KΩ				

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC VOLTAGE MEASUREMENTS ARE AT 20,000 OHMS PER VOLT; AC VOLTAGES MEASURED AT 1,000 OHMS PER VOLT.
2. SOCKET CONNECTIONS ARE SHOWN AS BOTTOM VIEWS.
3. MEASURED VALUES ARE FROM SOCKET PIN TO COMMON NEGATIVE.
4. LINE VOLTAGE MAINTAINED AT 117 VOLTS FOR VOLTAGE READINGS.
5. NOMINAL TOLERANCE ON COMPONENT VALUES MAKES POSSIBLE A VARIATION OF ± 10% IN VOLTAGE AND RESISTANCE READINGS.
6. VOLUME CONTROL AT MAXIMUM, NO SIGNAL APPLIED FOR VOLTAGE MEASUREMENTS.



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

PHOTOFACT* Fol
*TRADE MARK

RME 84

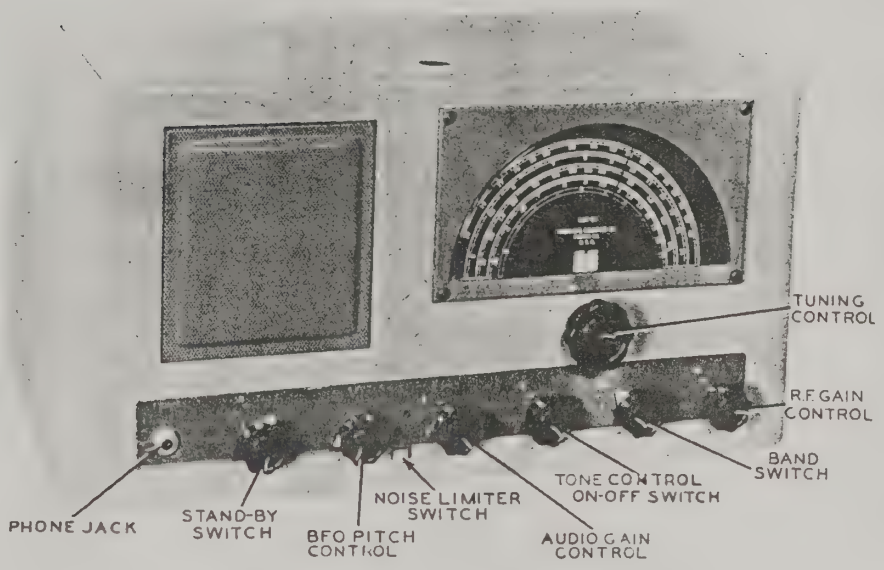
RME
MODEL 84

TRADE NAME	RME Model 8
MANUFACTURER	Radio Mfg.
TYPE SET	AC Operatec
TUBES (EIGHT)	Types, 7B7 AF, 7K7 N.1
POWER SUPPLY	110-120 Vol
RATING	.620 Amps.
TUNING RANGE—	BAND 1, 54(

ALIGNMENT I

"CW", "TR", "PH" switch sh
Gain should be at maximum
output reading. On Bands I
loading by signal generato
BFO Tube 7K7 (#6) should b
On all bands oscillator sh
at frequency and tune sign
should then be heard. If t
ing adjustments for that b

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING
.1 MFD.	High side to stator of tuning cap. Low side to chassis.
.1 MFD.	"
300Ω	High side to ext. ant. terminal board connection "A". Low side to "G" connection.
300Ω	"
300Ω	"
300Ω	"
300Ω	"
300Ω	"
300Ω	"
300Ω	"
300Ω	"
300Ω	
300Ω	"
300Ω	"
THE FOLLOWING ADJUSTMENT	
300Ω	High side to ext. ant. terminal board connection "A". Low side to "G" connection.



NOTE: CONTROLS AS FOLLOWS: PHONE NOISE LIMITER OFF, AUDIO GAIN MAXIMUM, TONE CONTROL AT „TREBLE" BAND SWITCH AT NO.1 & R F GAIN AT MAXIMUM, C W SWITCH "ON" FOR NO. 6 TUBE READINGS.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	6.5 V.AC	110V.DC	110 V.DC	2.9 V.DC	0V.	-.6 V.DC	2.9V.DC	0V.
2	7S7	6.5V.AC	300V.DC	165V.DC	-2.1 V.DC	60V.DC	0V.	2 V.DC	0V.
3	7B7	6.5 V.AC	300V.DC	110 V.DC	2.9V.DC	0V.	0V.	2.9 V.DC	0V.
4	7B7	6.5V.AC	300 V.DC	120V.DC	3.6 V.DC	0V.	0V.	3.6 V.DC	0V.
5	7K7	6.5V.AC	1.1V.DC	135V.DC	0V.	-.45V.DC	-.45V.DC	0V.	0V.
6	7K7	6.5V.AC	0V.	68 V.DC	-.8 V.DC	-.75V.DC	-.75 V.DC	-.75 V.DC	0V.
7	6G6G	0V.	6.5 V.AC	285V.DC	300V.DC	0V.	275V.DC	0V.	15 V.DC
8	5Y3GT	0V.	360V.DC	0V.	330V.AC	0V.	330V.AC	0V.	360V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	.2 Ω	36 KΩ	14 KΩ	140 Ω	0 Ω	1.6 MEG.	140 Ω	0 Ω
2	7S7	.2 Ω	14 KΩ	31 KΩ	55 KΩ	185 KΩ	2.9 Ω	220 Ω	0 Ω
3	7B7	.2 Ω	9.5 KΩ	8 KΩ	140 Ω	0 Ω	1.6 MEG.	140 Ω	0 Ω
4	7B7	.2 Ω	9.5 KΩ	4 KΩ	450 Ω	0 Ω	1.3 MEG.	450 Ω	0 Ω
5	7K7	.2 Ω	800 Ω	132 KΩ	460 KΩ	350 KΩ	350 KΩ	0 Ω	0 Ω
6	7K7	.2 Ω	.5 Ω	110 KΩ	55 KΩ	168 KΩ	168 KΩ	1.6 MEG.	0 Ω
7	6G6G	870 KΩ	.2 Ω	9.5 KΩ	9 KΩ	172 KΩ	28 KΩ	0 Ω	450 Ω
8	5Y3GT	INF.	9.5 KΩ	INF.	100 Ω	INF.	92 Ω	INF.	9.5 KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage measurements.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & C(

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case a recommendation, warranty or guaran
as to the quality and suitability of such replc
parts have been compiled from information fu
Inc., by the manufacturers of the particular
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RME MODEL 84

TRADE NAME	RME Model 84
MANUFACTURER	Radio Mfg. Engineers, Inc., Peoria (6), Ill.
TYPE SET	AC Operated Multiband Communications Superheterodyne Receiver
TUBES (EIGHT)	Types, 7B7 RF Amp., 7S7 Converter, 7B7 1st IF Amp., 7B7 2nd IF Amp., 7K7 Det.-AVC-AF, 7K7 N.L.-BFO, 6G6G Power Output, 5Y3G Rectifier.
POWER SUPPLY	110-120 Volts AC or 6V "A" Battery and 135V "B" Battery tapped at 90 Volts
RATING	.620 Amps. @ 117V AC or 1.5 Amps. @ 6.V DC and 32MA @ 135V DC
TUNING RANGE—	BAND 1, 540-1650KC; BAND 2, 1.65-5MC; BAND 3, 5-15MC; BAND 4, 15-44MC.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

"CW", "TR", "PH" switch should be on "CW", Noise Limiter off. Audio gain should be at maximum. RF Gain should be at maximum and output of signal generator no higher than necessary to obtain an output reading. On Bands III & IV it may be necessary to reduce RF Gain in order to prevent overloading by signal generator.

BFO Tube 7K7 (#6) should be removed on all adjustments except when adjusting A7 for zero beat. On all bands oscillator should be working above the incoming signal. To check this, leave receiver at frequency and tune signal generator 910KC above the alignment frequency. The image signal should then be heard. If this image signal is not heard re-adjust oscillator and repeat the remaining adjustments for that band. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of tuning cap. Low side to chassis.	455KC	I	Tuning cap. closed.	Across voice coil	A1,A2, A3,A4, A5,A6.	Adjust for maximum output.
.1 MFD.	"	"	"	"	"	A7	Turn B.O. pitch control vertical. Adjust for zero beat.
300Ω	High side to ext. ant. terminal board connection "A". Low side to "G" connection.	600KC	"	600KC	"	A8	Adjust for maximum output.
300Ω	"	1400KC	"	1400KC	"	A9	Adjust for maximum output. Repeat last two steps until no further improvement can be made.
300Ω	"	600KC	"	Tune for maxi-output.	"	A10,A11	Adjust for maximum output.
300Ω	"	1400KC	"	"	"	A12,A13	Adjust for maximum output. Repeat last two steps until no further increase can be obtained.
300Ω	"	1.9MC	II	1.9MC	"	A14	Adjust for maximum output.
300Ω	"	5MC	"	5MC	"	A15	Adjust for maximum output. Repeat last two steps until no further improvement can be made.
300Ω	"	1.9MC	"	Tune for maximum output.	"	A16,A17	Adjust for maximum output.
300Ω	"	5MC	"	"	"	A18,A19	" " " " Repeat last two steps until no further increase can be obtained.
300Ω	"	10MC	III	10MC	"	A20	Adjust for maximum output.
300Ω	"	"	"	Tune for maximum output.	"	A21,A22	Rock variable and adjust for maximum output.
300Ω	"	30MC	IV	30MC	"	A23	Adjust for maximum output.
300Ω	"	"	"	Tune for maxi-output.	"	A24,A25	Rock variable and adjust for maximum output.
THE FOLLOWING ADJUSTMENT SHOULD ONLY BE MADE WHEN ABSOLUTELY NECESSARY.							
300Ω	High side to ext. ant. terminal board connection "A". Low side to "G" connection.	15MC	IV	15MC	Across voice coil	A26	Adjust for maximum output. Repeat last three steps until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		RME PART No.	STANDARD REPLACEMENT		
1	RF Amp.	7B7	7B7	8V	
2	Converter	7S7	7S7	8BL	
3	1st IF Amp.	7B7	7B7	8V	
4	2nd IF Amp.	7B7	7B7	8V	
5	Det.-AVC-AF	7K7	7K7	8BF	
6	N.L.-BFO	7K7	7K7	8BF	
7	Power Output	6G6G	6G6G	7S	
8	Rectifier	5Y3G	5Y3G	5T	

CAPACITORS

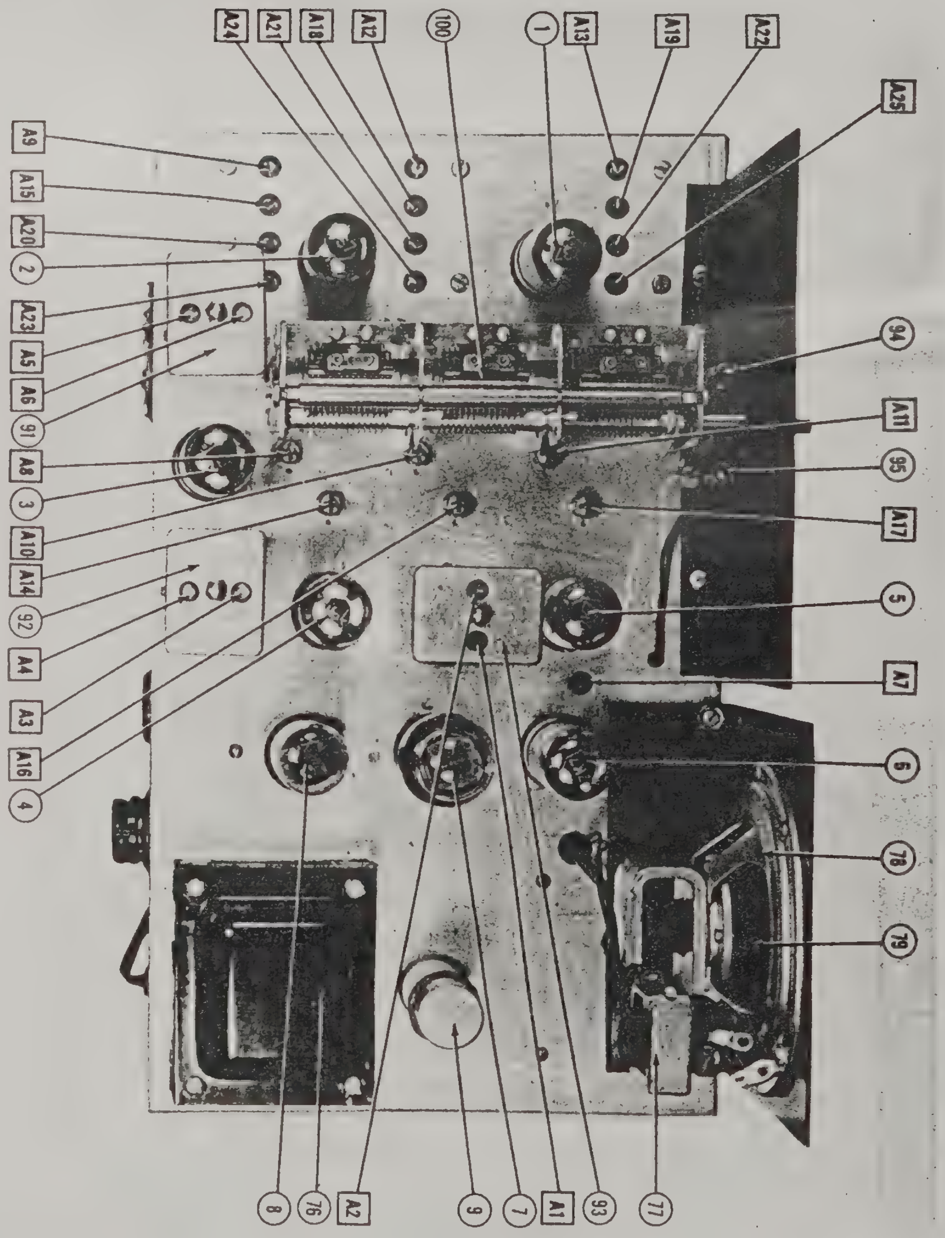
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RME PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	
9A	15	450		EL-344	AF44J	UP6CJ47	FP390	DY-3x15-450	■ Filter
B	10	450							"
C	15	450			PRS450-10				▲ "
10	25	25		TA-25	PRS25-25	BR202A	TC26	M-25-25	Output Cath. Bypass
11	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Tone Compensation
12	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Output Plate Bypass
13	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Audio Coupling
14	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	BFO Plate Bypass
15	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Audio Coupling
16	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	N.L. Bias Filter
17	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter
18	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	2nd IF Screen Bypass
19	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	2nd IF Cath. Bypass
20	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st IF Screen Bypass
21	.1	600		TC-1	684-.1	DT6P1	TP418	S-6-1	1st IF Cath. Bypass
22	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter
23	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Plate Decoup.
24	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Screen Bypass
25	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Cath. Bypass
26	.015	600		TC-11	684-015	DT6S15	TP411	S-6-01	Fixed Padder
27	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Osc. Plate Decoupling
28	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Plate Decoupling
29	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Screen Bypass
30	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Cath. Bypass
31	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	BFO Fixed Trimmer
32	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	BFO Grid Capacitor
33	250	500		1FM-325	1468-00025	5W5T25	MC240	M0.5-325	Audio Grid Capacitor
34	50	500		1FM-45	1468-00005	5W5Q5	MC225	M0.5-45	Diode
35	5								BFO Coupling Cer.
36	500	500		1FM-35	1468-0005	5W5T5	MC245	M0.5-35	Fixed Padder
37	150	500		1FM-315	1468-00015	5W5T15	MC236	M0.5-315	" "
38	4000	300		1FM-24	1467-004	1D5D4	MC463	MW.5-24	" "
39	250	500		1FM-325	1468-00025	5W5T25	MC240	M0.5-325	RF Coupling
40	250	500		1FM-325	1468-00025	5W5T25	MC240	M0.5-325	" "
41	1000	500		1FM-21	1467-001	1W5D1	MC255	MW.5-21	Osc. Plate Decoupling
42	50	500		1FM-45	1468-00005	5W5Q5	MC225	M0.5-45	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	RME PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
43A	1 Meg.	1		MR53	D13-137	M-63-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 43A per instructions
C	Switch			M27	42	SW-A2	" " " " "
44A	30KΩ	1		MR28	D14-120		RF Gain Control
B	Shaft			Not Req.	A		Attach to 44A per instructions
45A	500KΩ	1		MR48	D13-133	M-60-Z	Audio Gain Control-Late Production
B	Shaft			Not Req.	A	Not Req.	Attach to 45A per instructions
45A	250KΩ	1		MR44	D13-130	M-64-Z	Audio Gain Control-Early Production
b	Shaft			Not Req.	A	Not Req.	Attach to 45A per instructions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RME PART No.	IRC PART No.	
46	220KΩ	½		BTS-220K	Red-Red-Yl. RF Grid
47	150Ω	½		BW-½-150	Br.-Grn.-Br. RF Cathode
48	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Bleeder
49	4700Ω	½		BTS-4700	Yl.-Vi.-Red RF Screen Dropping
50	22KΩ	½		BTS-22K	Red-Red-Or. RF Plate Load
51	4700Ω	½		BTS-4700	Yl.-Vi.-Red RF Plate Decoupling
52	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Plate Decoupling
53	220Ω	½		BW-½-220	Red-Red-Br. Converter Cathode
54	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Oscillator Grid
55	220KΩ	½		BTS-220K	Red-Red-Yl. Converter Screen Dropping
56	4700Ω	½		BTS-4700	Yl.-Vi.-Red Converter Plate Decoupling-See Note 1
57	220KΩ	½		BTS-220K	Red-Red-Yl. AVC Network
58	4700Ω	½		BTS-4700	Yl.-Vi.-Red 1st IF Screen Dropping
59	470Ω	½		BTS-470	Yl.-Vi.-Br. 2nd IF Cathode
60	100KΩ	½		BTS-100K	Br.-Blk.-Yl, BFO Plate Dropping
61	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
62	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Noise Limiter Network
63	680KΩ	½		BTS-680K	Blue-Gray-Yl. Noise Limiter Network
64	47KΩ	½		BTS-47K	Yl.-Vi.-Or. BFO Grid
65	220KΩ	½		BTS-220K	Red-Red-Yl. Diode Load
66	220KΩ	½		BTS-220K	Red-Red-Yl. Diode Load
67	22KΩ	½		BTS-22K	Red-Red-Or. AF Grid
68	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
69	500Ω	½		BTS-470	Grn.-Blk.-Br. Output Cathode
70	12Ω	½		BW-½-12	Br.-Red-Blk. Headphone Shunt-See Note 2
71	22KΩ	½		BTS-22K	Red-Red-Or. AF Plate Decoupling
72	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AF Plate Load
73A	4500Ω	10		ABA-10,000	Voltage Dropping-See Note 3
B	5500Ω				Bleeder
74	820Ω	½		BTS-820	Gray-Red-Br. AF Cathode

Note 1 - Some models use 22KΩ in this application
Note 2 - Some models use 33Ω in this application
Note 3 - On IRC replacement set slider @ 4500Ω from one end.

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA			INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000~)	RME PART NO.	STANCOR PART NO.	THORDARSON PART NO.	
75	.084A	570Ω	13 Henries		C-1709	T20C53	

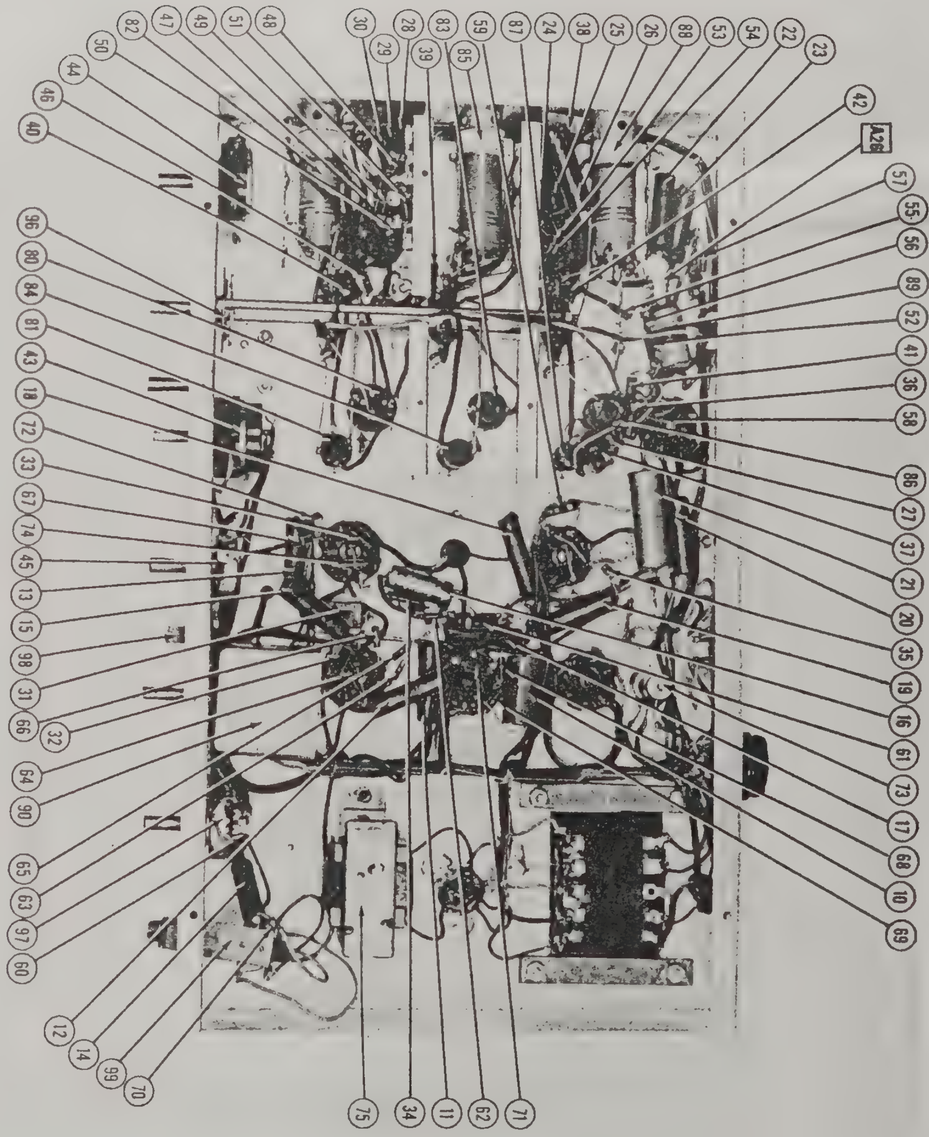
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RME PART No.	STANCOR PART No.	THORDARSON PART No.	
76	117V AC @ .62A	660V CT @ .084A	5.2V AC @ 1.6A	6.5V AC @ 1.7A		P-6013	T22R05	

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.						
	PRI.	SEC.	PRI.	SEC.	RME PART No.	STANCOR PART No.	THORDAR'N PART No.		
77	7200Ω	3.4Ω	700Ω	.7Ω		A-3878†	T22S47†		†Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RME PART No.	IRC PART No.	
46	220KΩ	½		BTS-220K	Red-Red-Yl. RF Grid
47	150Ω	½		BW-½-150	Br.-Grn.-Br. RF Cathode
48	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Bleeder
49	4700Ω	½		BTS-4700	Yl.-Vi.-Red RF Screen Dropping
50	22KΩ	½		BTS-22K	Red-Red-Or. RF Plate Load
51	4700Ω	½		BTS-4700	Yl.-Vi.-Red RF Plate Decoupling
52	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Plate Decoupling
53	220Ω	½		BW-½-220	Red-Red-Br. Converter Cathode
54	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Oscillator Grid
55	220KΩ	½		BTS-220K	Red-Red-Yl. Converter Screen Dropping
56	4700Ω	½		BTS-4700	Yl.-Vi.-Red Converter Plate Decoupling-See Note 1
57	220KΩ	½		BTS-220K	Red-Red-Yl. AVC Network
58	4700Ω	½		BTS-4700	Yl.-Vi.-Red 1st IF Screen Dropping
59	470Ω	½		BTS-470	Yl.-Vi.-Br. 2nd IF Cathode
60	100KΩ	½		BTS-100K	Br.-Blk.-Yl, BFO Plate Dropping

NOTE: CONTROLS AS FOLLOWS: PHONE NOISE LIMITER OFF, AUDIO GAIN MAXIMUM, TONE CONTROL AT "TREBLE BAND SWITCH" AT NO.1 & R F GAIN AT MAXIMUM, C W SWITCH "ON" FOR NO. 6 TUBE READINGS.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	6.5 V.AC	110V.DC	110 V.DC	2.9 V.DC	0V.	-.6 V.DC	2.9V.DC	0V.
2	7S7	6.5V.AC	300V.DC	165V.DC	-2.1 V.DC	60V.DC	0V.	2 V.DC	0V.
3	7B7	6.5 V.AC	300V.DC	110 V.DC	2.9V.DC	0V.	0V.	2.9 V.DC	0V.
4	7B7	6.5 V.AC	300 V.DC	120V.DC	3.6 V.DC	0V.	0V.	3.8 V.DC	0V.
5	7K7	6.5V.AC	1.1V.DC	135V.DC	0V.	-.45V.DC	-.45V.DC	0V.	0V.
6	7K7	6.5V.AC	0V.	68 V.DC	-.8 V.DC	-.75V.DC	-.75 V.DC	-.75 V.DC	0V.
7	6G6G	0V.	6.5 V.AC	285V.DC	300V.DC	0V.	275V.DC	0V.	15 V.DC
8	5Y3GT	0V.	360V.DC	0V.	330V.AC	0V.	330V.AC	0V.	360V.DC

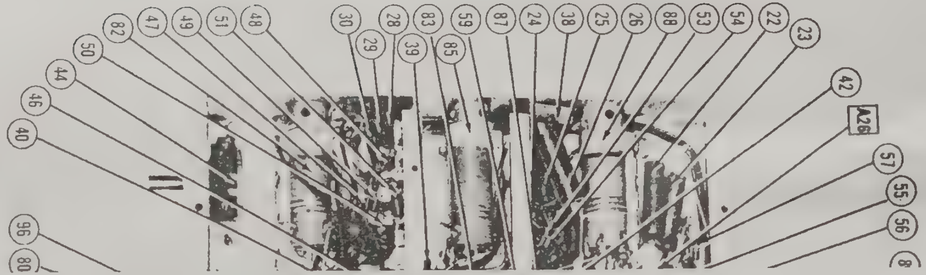
RESISTANCE READINGS

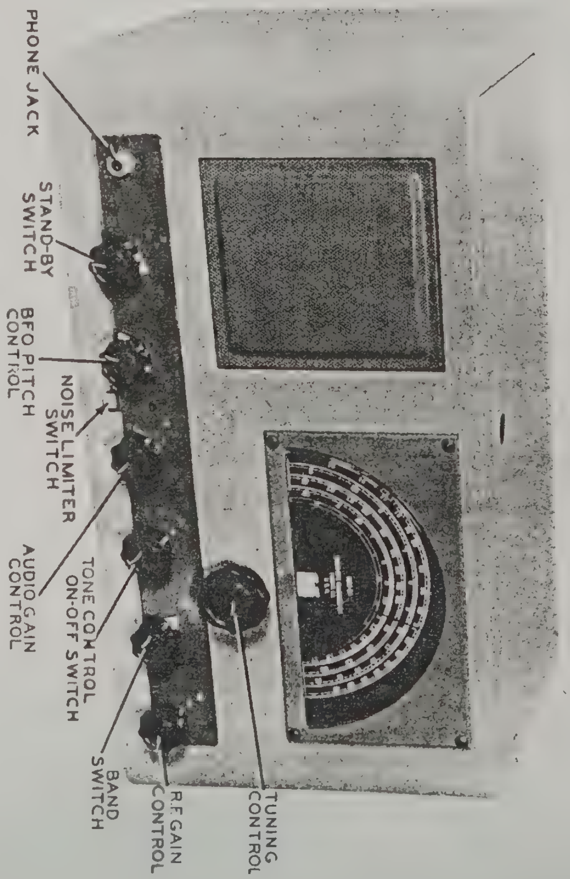
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	.2 Ω	36 KΩ	14 KΩ	140 Ω	0 Ω	1.6 MEG.	140 Ω	0 Ω
2	7S7	.2 Ω	14 KΩ	31 KΩ	55 KΩ	185 KΩ	2.9 Ω	220 Ω	0 Ω
3	7B7	.2 Ω	9.5 KΩ	8 KΩ	140 Ω	0 Ω	1.6 MEG.	140 Ω	0 Ω
4	7B7	.2 Ω	9.5 KΩ	4 KΩ	450 Ω	0 Ω	1.3 MEG.	450 Ω	0 Ω
5	7K7	.2 Ω	800 Ω	132 KΩ	460 KΩ	350 KΩ	350 KΩ	0 Ω	0 Ω
6	7K7	.2 Ω	.5 Ω	110 KΩ	55 KΩ	168 KΩ	168 KΩ	1.6 MEG.	0 Ω
7	6G6G	870 KΩ	.2 Ω	9.5 KΩ	9 KΩ	172 KΩ	28 KΩ	0 Ω	450 Ω
8	5Y3GT	INF.	9.5 KΩ	INF.	100 Ω	INF.	92 Ω	INF.	9.5 KΩ

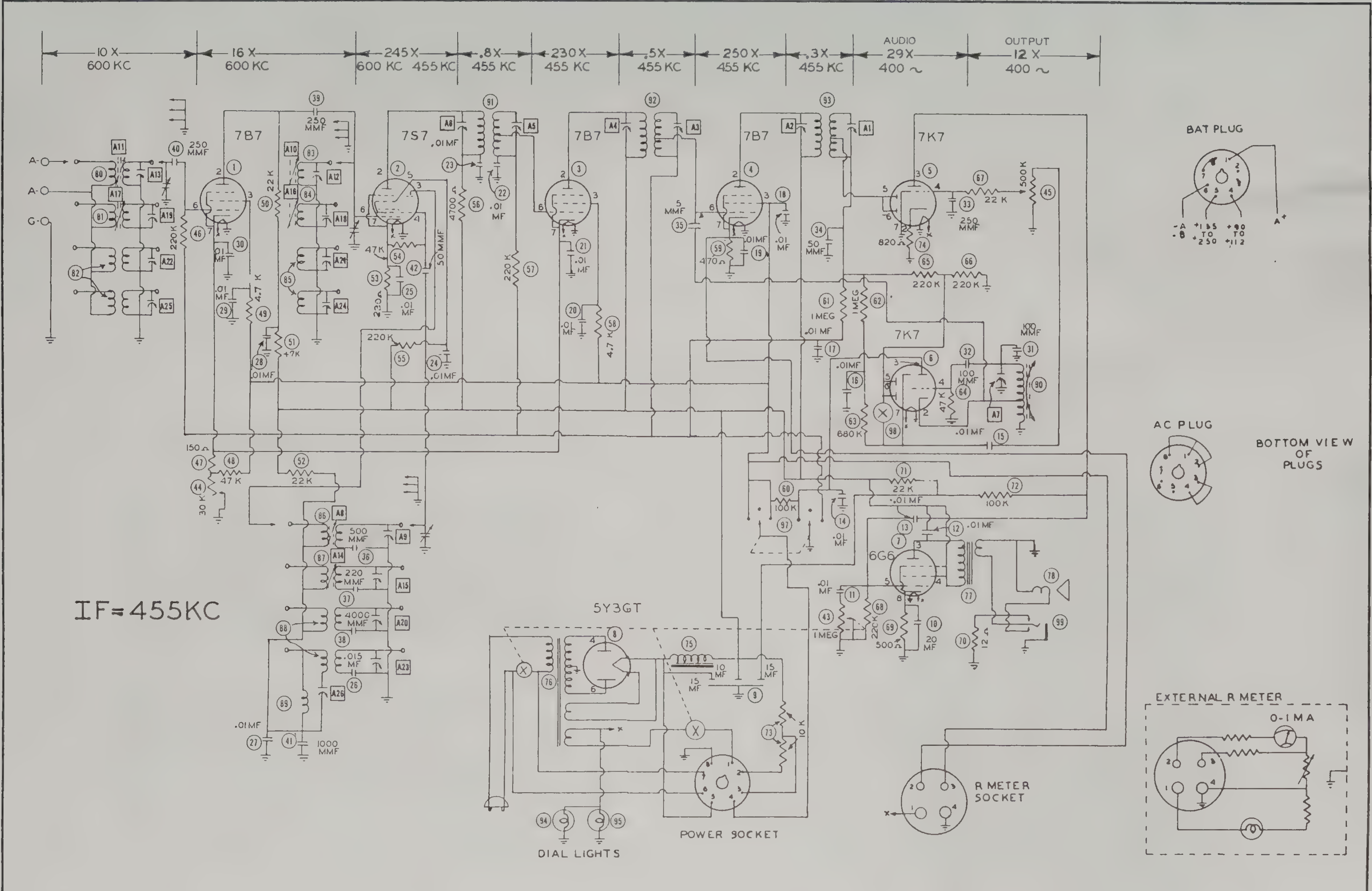
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage measurements.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CHASSIS—BOTTOM VIEW







THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

474-13

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, [illegible] as, type of equipment used for measuring, handling and placement o[illegible]bes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

RME 84

RME
MODEL 84

TRADE NAME	RME Model 8
MANUFACTURER	Radio Mfg.
TYPE SET	AC Operatec
TUBES (EIGHT)	Types, 7B7 AF, 7K7 N.I
POWER SUPPLY RATING	110-120 Vol .620 Amps.
TUNING RANGE—	BAND 1, 54C

ALIGNMENT I

"CW", "TR", "PH" switch sh
Gain should be at maximum
output reading. On Bands I
loading by signal generato
BFO Tube 7K7 (#6) should b
On all bands oscillator sh
at frequency and tune sign
should then be heard. If t
ing adjustments for that b

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING
.1 MFD.	High side to stator of tuning cap. Low side to chassis.
.1 MFD.	"
300Ω	High side to ext. ant. terminal board connection "A". Low side to "G" connection.
300Ω	"
300Ω	"
300Ω	"
300Ω	"
300Ω	"
300Ω	"
300Ω	"
300Ω	"
300Ω	"
300Ω	"
300Ω	"
THE FOLLOWING ADJUSTMENT	
300Ω	High side to ext. ant. terminal board connection "A". Low side to "G" connection.

HOWARD W. SAMS & C(

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case a recommendation, warranty or guaran
as to the quality and suitability of such replo
parts have been compiled from information fu
Inc., by the manufacturers of the particular
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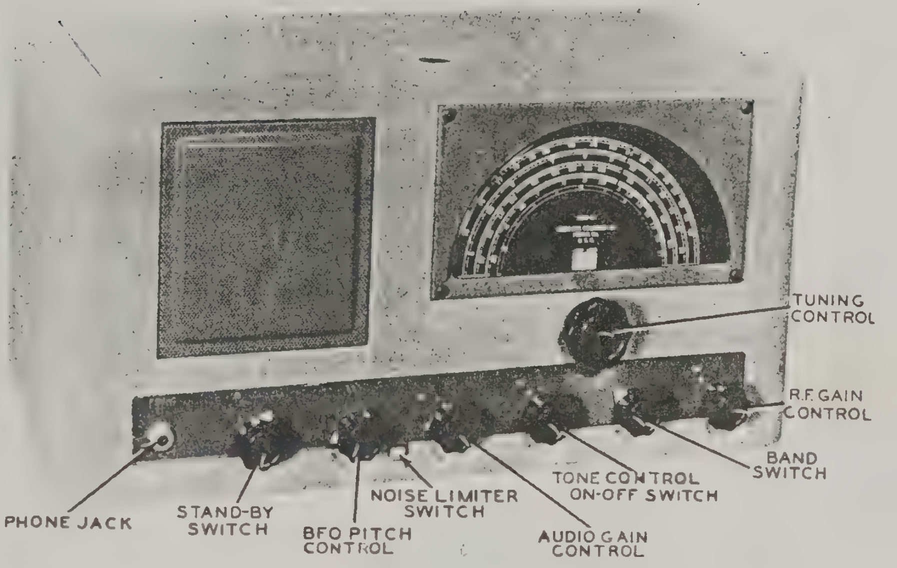

NOTE: CONTROLS AS FOLLOWS: PHONE NOISE LIMITER OFF, AUDIO GAIN MAXIMUM, TONE CONTROL AT "TREBLE" BAND SWITCH AT NO.1 & RF GAIN AT MAXIMUM, C W SWITCH "ON" FOR NO. 8 TUBE READINGS.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	6,5 V.AC	110V.DC	110 V.DC	2,9 V.DC	0V.	-.6 V.DC	2,9V.DC	0V.
2	7S7	6,5 V.AC	300V.DC	165V.DC	-2,1 V.DC	60V.DC	0V.	2 V.DC	0V.
3	7B7	6,5 V.AC	300V.DC	110 V.DC	2,9V.DC	0V.	0V.	2,9 V.DC	0V.
4	7B7	6,5 V.AC	300 V.DC	120V.DC	3,6 V.DC	0V.	0V.	3,8 V.DC	0V.
5	7K7	6,5 V.AC	1,1V.DC	135V.DC	0V.	-.45V.DC	-.45 V.DC	0V.	0V.
6	7K7	6,5 V.AC	0V.	68 V.DC	-.8 V.DC	-.75V.DC	-.75 V.DC	-.75 V.DC	0V.
7	6G6G	0V.	6,5 V.AC	285V.DC	300V.DC	0V.	275V.DC	0V.	15 V.DC
8	5Y3GT	0V.	360V.DC	0V.	330V.AC	0V.	330V.AC	0V.	360V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	.2 Ω	36 KΩ	14 KΩ	140 Ω	0 Ω	1.6 MEG.	140 Ω	0 Ω
2	7S7	.2 Ω	14 KΩ	31 KΩ	55 KΩ	185 KΩ	2,9 Ω	220 Ω	0 Ω
3	7B7	.2 Ω	9,5 KΩ	8 KΩ	140 Ω	0 Ω	1,6 MEG.	140 Ω	0 Ω
4	7B7	.2 Ω	9,5 KΩ	4 KΩ	450 Ω	0 Ω	1,3 MEG.	450 Ω	0 Ω
5	7K7	.2 Ω	800 Ω	132 KΩ	460 KΩ	350 KΩ	350 KΩ	0 Ω	0 Ω
6	7K7	.2 Ω	.5 Ω	110 KΩ	55 KΩ	168 KΩ	168 KΩ	1,6 MEG.	0 Ω
7	6G6G	870 KΩ	.2 Ω	9,5 KΩ	9 KΩ	172 KΩ	28 KΩ	0 Ω	450 Ω
8	5Y3GT	INF.	9,5 KΩ	INF.	100 Ω	INF.	92 Ω	INF.	9,5 KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY
ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage measurements.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RME MODEL 84

TRADE NAME	RME Model 84
MANUFACTURER	Radio Mfg. Engineers, Inc., Peoria (6), Ill.
TYPE SET	AC Operated Multiband Communications Superheterodyne Receiver
TUBES (EIGHT)	Types, 7B7 RF Amp., 7S7 Converter, 7B7 1st IF Amp., 7B7 2nd IF Amp., 7K7 Det.-AVC-AF, 7K7 N.L.-BFO, 6G6G Power Output, 5Y3G Rectifier.
POWER SUPPLY	110-120 Volts AC or 6V "A" Battery and 135V "B" Battery tapped at 90 Volts
RATING	.620 Amps. @ 117V AC or 1.5 Amps. @ 6.V DC and 32MA @ 135V DC
TUNING RANGE—	BAND 1, 540-1650KC; BAND 2, 1.65-5MC; BAND 3, 5-15MC; BAND 4, 15-44MC.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

"CW", "TR", "PH" switch should be on "CW", Noise Limiter off. Audio gain should be at maximum. RF Gain should be at maximum and output of signal generator no higher than necessary to obtain an output reading. On Bands III & IV it may be necessary to reduce RF Gain in order to prevent overloading by signal generator.

BFO Tube 7K7 (#6) should be removed on all adjustments except when adjusting A7 for zero beat. On all bands oscillator should be working above the incoming signal. To check this, leave receiver at frequency and tune signal generator 910KC above the alignment frequency. The image signal should then be heard. If this image signal is not heard re-adjust oscillator and repeat the remaining adjustments for that band. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of tuning cap. Low side to chassis.	455KC	I	Tuning cap. closed.	Across voice coil	A1,A2, A3,A4, A5,A6.	Adjust for maximum output.
.1 MFD.	"	"	"	"	"	A7	Turn B.O. pitch control vertical. Adjust for zero beat.
300Ω	High side to ext. ant. terminal board connection "A". Low side to "G" connection.	600KC	"	600KC	"	A8	Adjust for maximum output.
300Ω	"	1400KC	"	1400KC	"	A9	Adjust for maximum output. Repeat last two steps until no further improvement can be made.
300Ω	"	600KC	"	Tune for maxi-output.	"	A10,A11	Adjust for maximum output.
300Ω	"	1400KC	"	"	"	A12,A13	Adjust for maximum output. Repeat last two steps until no further increase can be obtained.
300Ω	"	1.9MC	II	1.9MC	"	A14	Adjust for maximum output.
300Ω	"	5MC	"	5MC	"	A15	Adjust for maximum output. Repeat last two steps until no further improvement can be made.
300Ω	"	1.9MC	"	Tune for maximum output.	"	A16,A17	Adjust for maximum output.
300Ω	"	5MC	"	"	"	A18,A19	" " " " Repeat last two steps until no further increase can be obtained.
300Ω	"	10MC	III	10MC	"	A20	Adjust for maximum output.
300Ω	"	"	"	Tune for maximum output.	"	A21,A22	Rock variable and adjust for maximum output.
300Ω	"	30MC	IV	30MC	"	A23	Adjust for maximum output.
300Ω	"	"	"	Tune for maxi-output.	"	A24,A25	Rock variable and adjust for maximum output.
THE FOLLOWING ADJUSTMENT SHOULD ONLY BE MADE WHEN ABSOLUTELY NECESSARY.							
300Ω	High side to ext. ant. terminal board connection "A". Low side to "G" connection.	15MC	IV	15MC	Across voice coil	A26	Adjust for maximum output. Repeat last three steps until no further improvement can be made.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		RME PART No.	STANDARD REPLACEMENT		
1	RF Amp.	7B7	7B7	8V	
2	Converter	7S7	7S7	8BL	
3	1st IF Amp.	7B7	7B7	8V	
4	2nd IF Amp.	7B7	7B7	8V	
5	Det.-AVC-AF	7K7	7K7	8BF	
6	N.L.-BFO	7K7	7K7	8BF	
7	Power Output	6G6G	6G6G	7S	
8	Rectifier	5Y3G	5Y3G	5T	

CAPACITORS

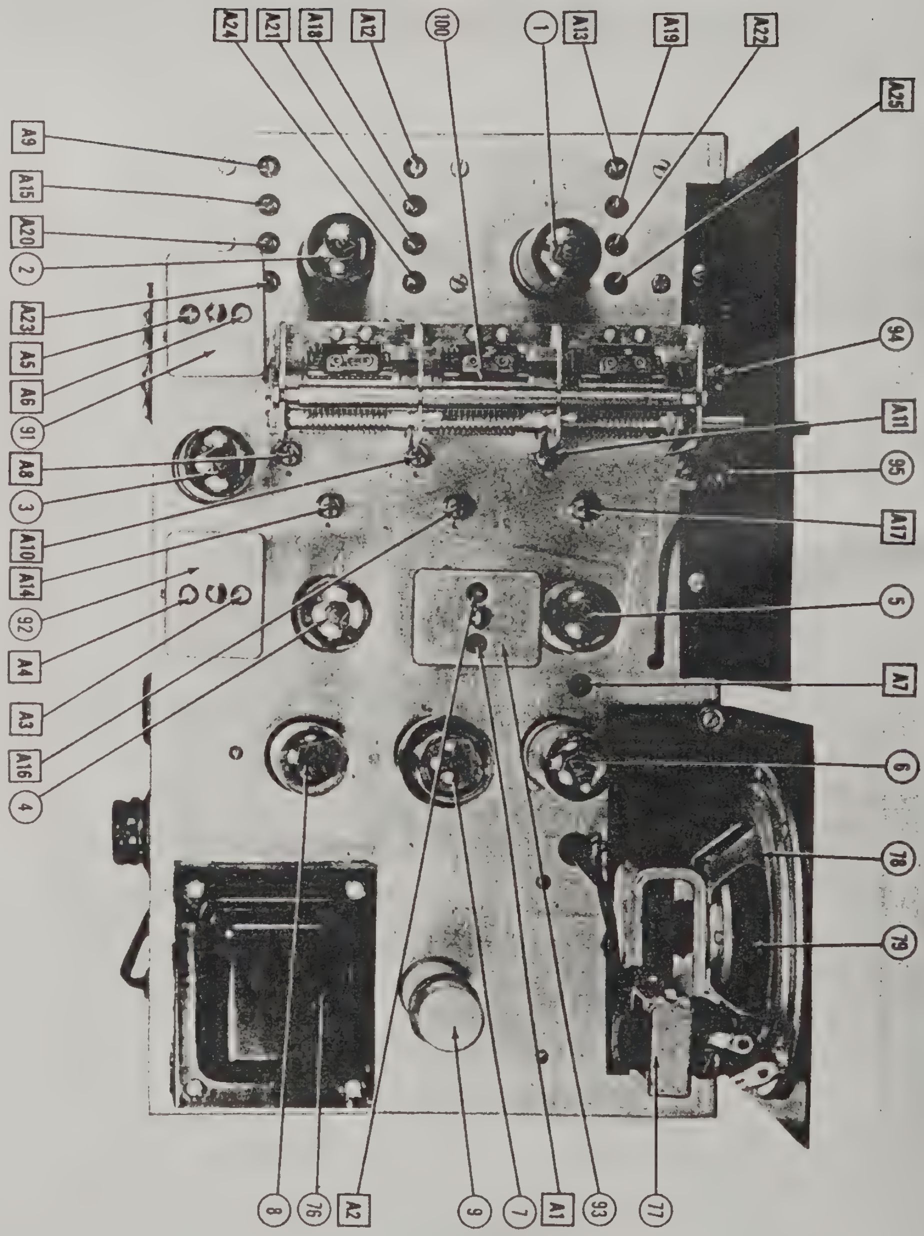
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RME PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	
9A	15	450		EL-344	AF44J	UP6CJ47	FP390	DY-3x15-450	■ Filter
B	10	450							■ "
C	15	450			PRS450-10				▲ "
10	20	25		TA-25	PRS25-25	BR202A	TC26	M-25-25	Output Cath. Bypass
11	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Tone Compensation
12	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Output Plate Bypass
13	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Audio Coupling
14	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	BFO Plate Bypass
15	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Audio Coupling
16	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	N.L. Bias Filter
17	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter
18	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	2nd IF Screen Bypass
19	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	2nd IF Cath. Bypass
20	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	1st IF Screen Bypass
21	.1	600		TC-1	684-.1	DT6P1	TP418	S-6-1	1st IF Cath. Bypass
22	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	AVC Filter
23	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Plate Decoup.
24	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Screen Bypass
25	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Conv. Cath. Bypass
26	.015	600		TC-11	684-015	DT6S15	TP411	S-6-01	Fixed Padder
27	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	Osc. Plate Decoupling
28	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Plate Decoupling
29	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Screen Bypass
30	.01	600		TC-11	684-01	DT6S1	TP410	S-6-01	RF Cath. Bypass
31	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	BFO Fixed Trimmer
32	100	500		1FM-31	1468-0001	5W5T1	MC235	M0.5-31	BFO Grid Capacitor
33	250	500		1FM-325	1468-00025	5W5T25	MC240	M0.5-325	Audio Grid Capacitor
34	50	500		1FM-45	1468-00005	5W5Q5	MC225	M0.5-45	Diode
35	5								BFO Coupling Cer.
36	500	500		1FM-35	1468-0005	5W5T5	MC245	M0.5-35	Fixed Padder
37	150	500		1FM-315	1468-00015	5W5T15	MC236	M0.5-315	" "
38	4000	300		1FM-24	1467-004	1D5D4	MC463	MW.5-24	" "
39	250	500		1FM-325	1468-00025	5W5T25	MC240	M0.5-325	RF Coupling
40	250	500		1FM-325	1468-00025	5W5T25	MC240	M0.5-325	" "
41	1000	500		1FM-21	1467-001	1W5D1	MC255	MW.5-21	Osc. Plate Decoupling
42	50	500		1FM-45	1468-00005	5W5Q5	MC225	M0.5-45	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	RME PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
43A	1 Meg.	1		MR53	D13-137	M-63-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 43A per instructions
C	Switch			M27	42	SW-A2	" " " " "
44A	30KΩ	1		MR28	D14-120		RF Gain Control
B	Shaft			Not Req.	A		Attach to 44A per instructions
45A	500KΩ	1		MR48	D13-133	M-60-Z	Audio Gain Control-Late Production
B	Shaft			Not Req.	A	Not Req.	Attach to 45A per instructions
45A	250KΩ	1		MR44	D13-130	M-54-Z	Audio Gain Control-Early Production
B	Shaft			Not Rec.	A	Not Req.	Attach to 45A per instructions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RME PART No.	IRC PART No.	
46	220KΩ	½		BTS-220K	Red-Red-Yl. RF Grid
47	150Ω	½		BW-½-150	Br.-Grn.-Br. RF Cathode
48	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Bleeder
49	4700Ω	½		BTS-4700	Yl.-Vi.-Red RF Screen Dropping
50	22KΩ	½		BTS-22K	Red-Red-Or. RF Plate Load
51	4700Ω	½		BTS-4700	Yl.-Vi.-Red RF Plate Decoupling
52	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Plate Decoupling
53	220Ω	½		BW-½-220	Red-Red-Br. Converter Cathode
54	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Oscillator Grid
55	220KΩ	½		BTS-220K	Red-Red-Yl. Converter Screen Dropping
56	4700Ω	½		BTS-4700	Yl.-Vi.-Red Converter Plate Decoupling-See Note 1
57	220KΩ	½		BTS-220K	Red-Red-Yl. AVC Network
58	4700Ω	½		BTS-4700	Yl.-Vi.-Red 1st IF Screen Dropping
59	470Ω	½		BTS-470	Yl.-Vi.-Br. 2nd IF Cathode
60	100KΩ	½		BTS-100K	Br.-Blk.-Yl, BFO Plate Dropping
61	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
62	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Noise Limiter Network
63	680KΩ	½		BTS-680K	Blue-Gray-Yl. Noise Limiter Network
64	47KΩ	½		BTS-47K	Yl.-Vi.-Or. BFO Grid
65	220KΩ	½		BTS-220K	Red-Red-Yl. Diode Load
66	220KΩ	½		BTS-220K	Red-Red-Yl. Diode Load
67	22KΩ	½		BTS-22K	Red-Red-Or. AF Grid
68	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
69	500Ω	½		BTS-470	Grn.-Blk.-Br. Output Cathode
70	12Ω	½		BW-½-12	Br.-Red-Blk. Headphone Shunt-See Note 2
71	22KΩ	½		BTS-22K	Red-Red-Or. AF Plate Decoupling
72	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AF Plate Load
73A	4500Ω	10		ABA-10,000	Voltage Dropping-See Note 3
B	5500Ω				Bleeder
74	820Ω	½		BTS-820	Gray-Red-Br. AF Cathode

Note 1 - Some models use 22KΩ in this application
Note 2 - Some models use 33Ω in this application
Note 3 - On IRC replacement set slider @ 4500Ω from one end.

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA			INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000~)	RME PART NO.	STANCOR PART NO.	THORDARSON PART NO.	
75	.084A	570Ω	13 Henries		C-1709	T20C53	

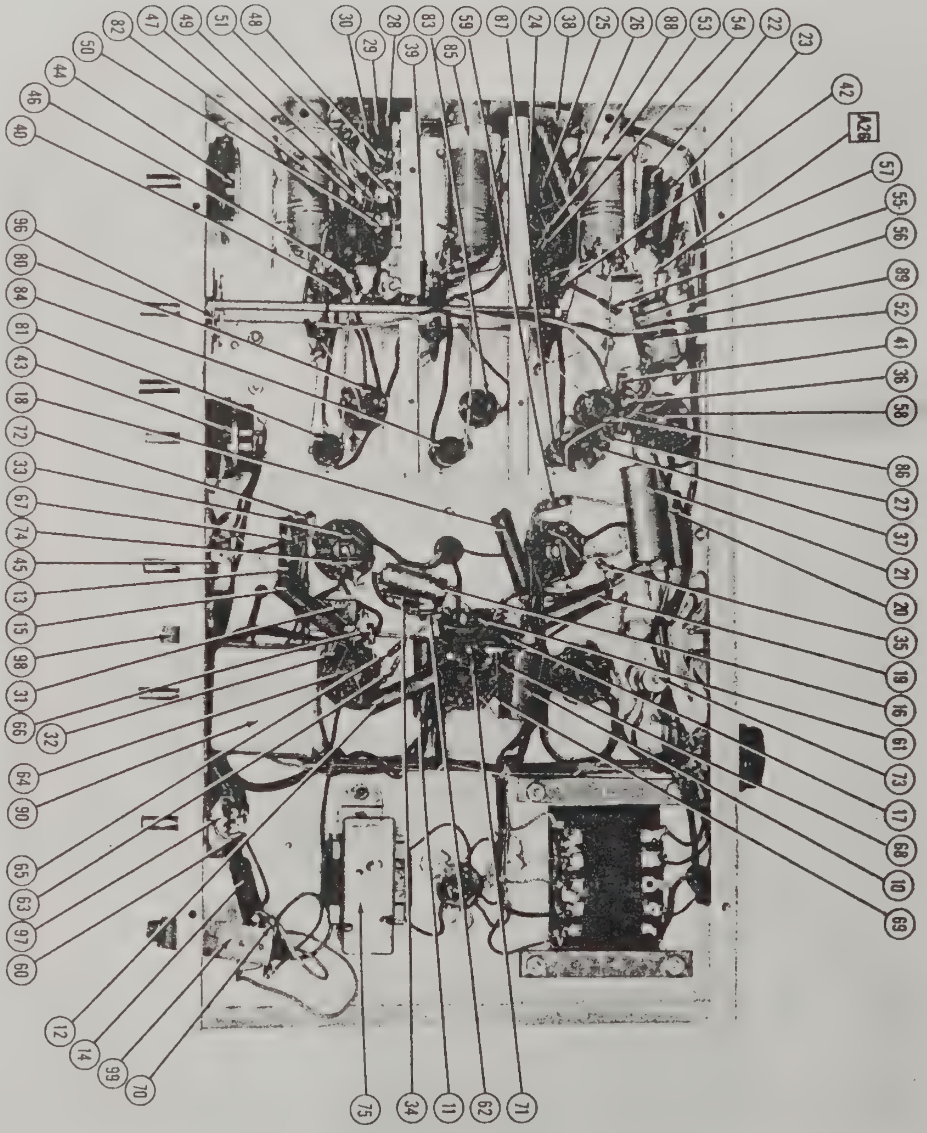
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RME PART No.	STANCOR PART No.	THORDARSON PART No.	
76	117V AC @ .62A	600V CT @ .084A	5.2V AC @ 1.6A	6.3V AC @ 1.7A		P-6013	T22R05	

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.						
	PRI.	SEC.	PRI.	SEC.	RME PART No.	STANCOR PART No.	THORDAR'N PART No.		
77	7200Ω	3.4Ω	700Ω	.7Ω		A-3878†	T22S471		†Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RME PART No.	IRC PART No.	
46	220KΩ	½		BTS-220K	Red-Red-Yl. RF Grid
47	150Ω	½		BW-½-150	Br.-Grn.-Br. RF Cathode
48	47KΩ	½		BTS-47K	Yl.-Vl.-Or. Bleeder
49	4700Ω	½		BTS-4700	Yl.-Vl.-Red RF Screen Dropping
50	22KΩ	½		BTS-22K	Red-Red-Or. RF Plate Load
51	4700Ω	½		BTS-4700	Yl.-Vl.-Red RF Plate Decoupling
52	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Plate Decoupling
53	220Ω	½		BW-½-220	Red-Red-Br. Converter Cathode
54	47KΩ	½		BTS-47K	Yl.-Vl.-Or. Oscillator Grid
55	220KΩ	½		BTS-220K	Red-Red-Yl. Converter Screen Dropping
56	4700Ω	½		BTS-4700	Yl.-Vl.-Red Converter Plate Decoupling-See Note 1
57	220KΩ	½		BTS-220K	Red-Red-Yl. AVC Network
58	4700Ω	½		BTS-4700	Yl.-Vl.-Red 1st IF Screen Dropping
59	470Ω	½		BTS-470	Yl.-Vl.-Br. 2nd IF Cathode
60	100KΩ	½		BTS-100K	Br.-Blk.-Yl, BFO Plate Dropping

NOTE: CONTROLS AS FOLLOWS: PHONE NOISE LIMITER OFF, AUDIO GAIN MAXIMUM, TONE CONTROL AT „TREBLE BAND SWITCH 'AT NO.1 & R F GAIN AT MAXIMUM, C W SWITCH"ON"FOR NO.6 TUBE READINGS.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	6.5 V.AC	110V.DC	110 V.DC	2.9 V.DC	0V.	-.6 V.DC	2.9V.DC	0V.
2	7S7	6.5V.AC	300V.DC	165V.DC	-2.1 V.DC	60V.DC	0V.	2 V.DC	0V.
3	7B7	6.5 V.AC	300V.DC	110 V.DC	2.9V.DC	0V.	0V.	2.9 V.DC	0V.
4	7B7	6.5V.AC	300 V.DC	120V.DC	3.6 V.DC	0V.	0V.	3.6V.DC	0V.
5	7K7	6.5V.AC	1.1V.DC	135V.DC	0V.	-.45V.DC	-.45V.DC	0V.	0V.
6	7K7	6.5V.AC	0V.	68V.DC	-.8V.DC	-.75V.DC	-.75V.DC	-.75V.DC	0V.
7	6G6G	0V.	6.5 V.AC	285V.DC	300V.DC	0V.	275V.DC	0V.	15 V.DC
8	5Y3GT	0V.	360V.DC	0V.	330V.AC	0V.	330V.AC	0V.	360V.DC

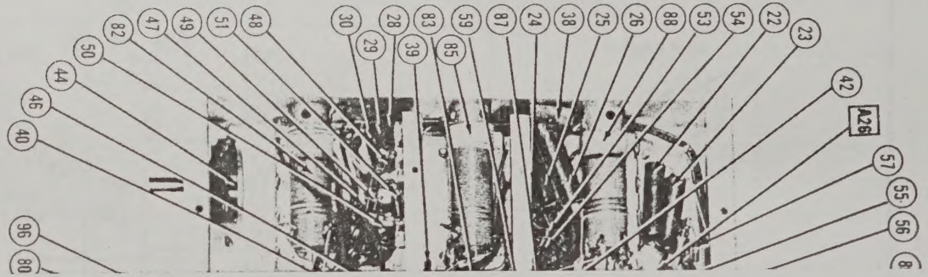
RESISTANCE READINGS

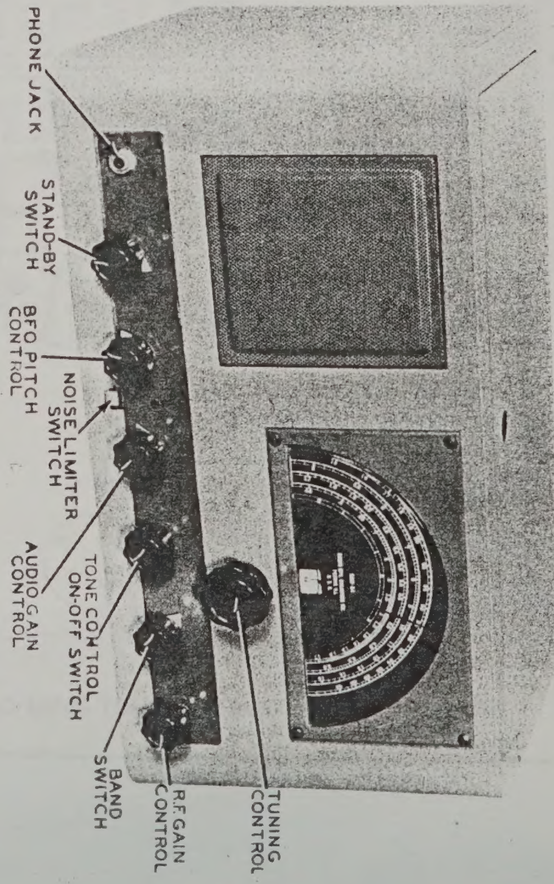
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7B7	.2 Ω	36 KΩ	14 KΩ	140Ω	0Ω	1.6 MEG.	140Ω	0Ω
2	7S7	.2 Ω	14 KΩ	31 KΩ	55KΩ	185KΩ	2.9 Ω	220Ω	0Ω
3	7B7	.2 Ω	9.5 KΩ	8 KΩ	140Ω	0Ω	1.6MEG.	140Ω	0Ω
4	7B7	.2 Ω	9.5 KΩ	4 KΩ	450Ω	0Ω	1.3MEG.	450Ω	0Ω
5	7K7	.2 Ω	800Ω	132KΩ	460 KΩ	350 KΩ	350KΩ	0 Ω	0Ω
6	7K7	.2 Ω	.5 Ω	110 KΩ	55KΩ	168 KΩ	168 KΩ	1.6 MEG.	0Ω
7	6G6G	870KΩ	.2 Ω	9.5 KΩ	9 KΩ	172KΩ	28 KΩ	0Ω	450Ω
8	5Y3GT	INF.	9.5 KΩ	INF.	100Ω	INF.	92 Ω	INF.	9.5 KΩ

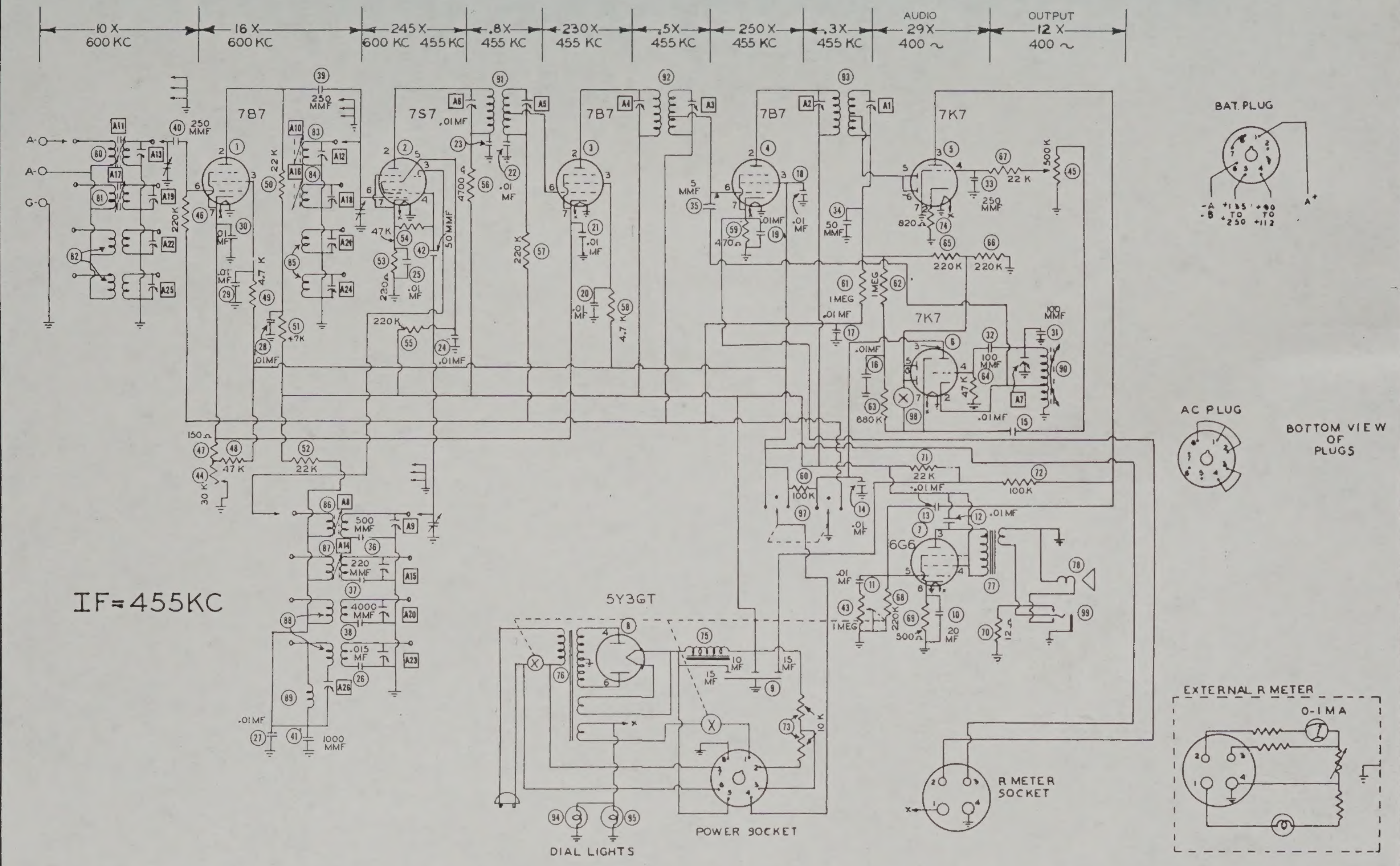
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage measurements.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CHASSIS—BOTTOM VIEW







THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

474-13

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, [illegible] as, type of equipment used for measuring, handling and placement o[illegible]bes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.